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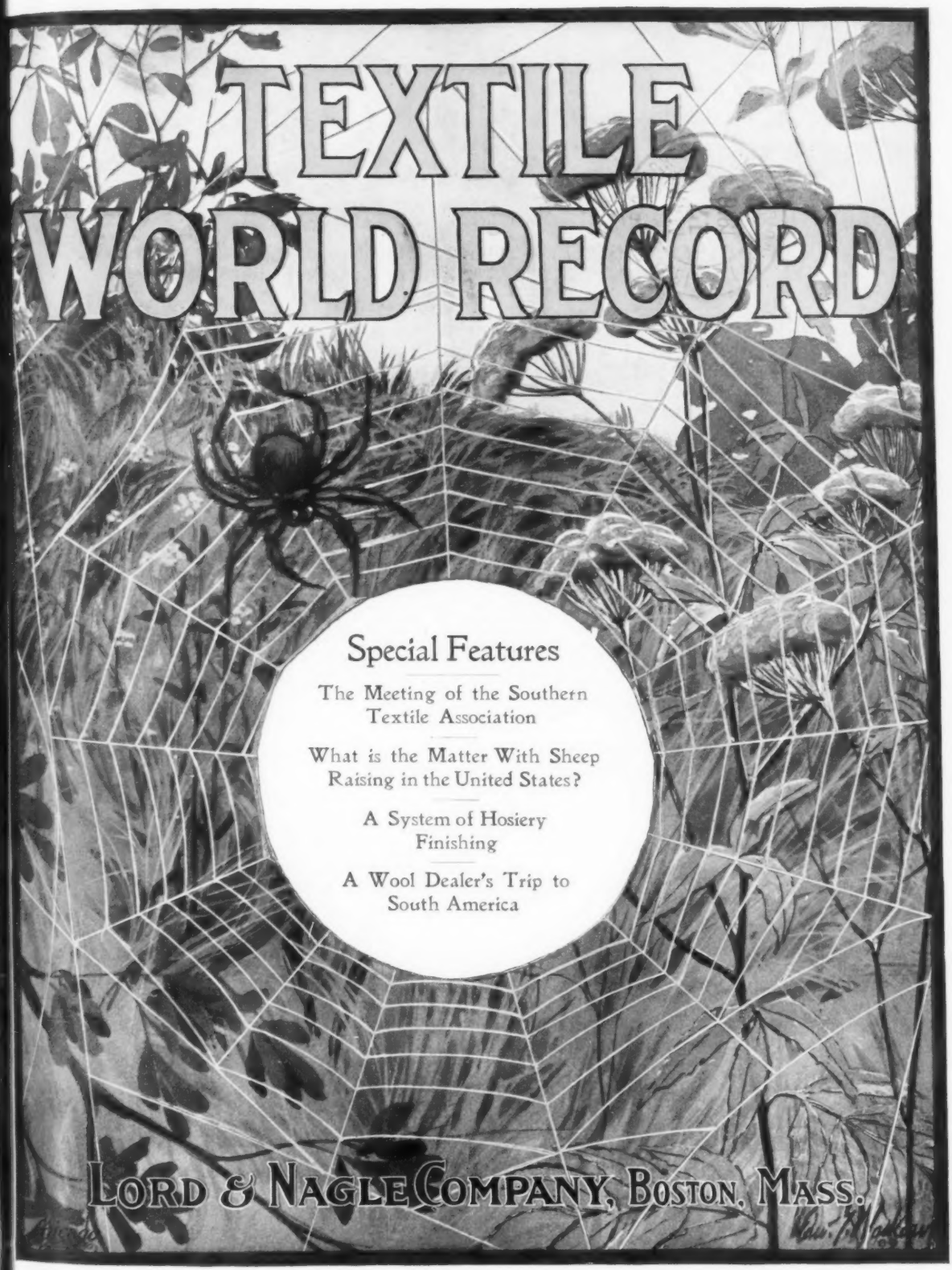
TEXTILE
WORLD RECORD
Special Features
The Meeting of the Southern Textile Association
What is the Matter With Sheep Raising in the United States?
A System of Hosiery Finishing
A Wool Dealer's Trip to South America
LORD & NAGLE COMPANY, BOSTON, MASS.

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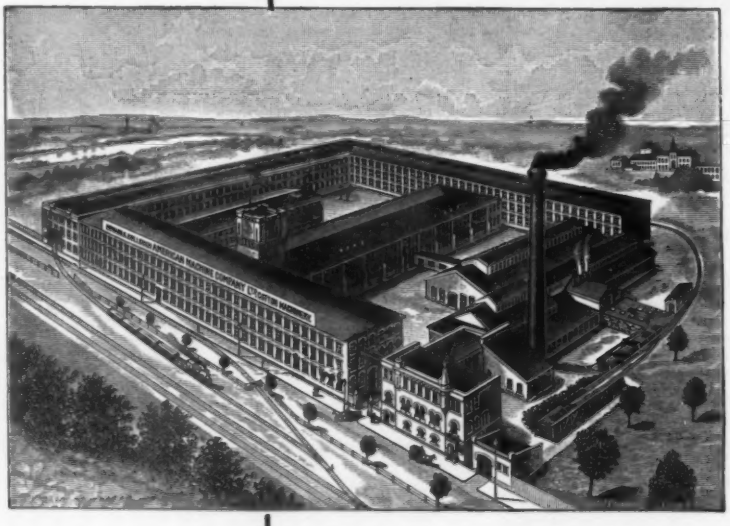

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The Textile World and Textile Record.

VOL. 38 (NEW SERIES.) March, 1910 No. 6

Monthly Comment.

What is the Matter with Wool Growing?

Wool growing in the United States has been neglected. Other industries have enjoyed the government's fostering care. The government, for example, has for years made cotton growing the object of its special consideration. Statistical departments, experimental stations and educational bureaus have been given up to cotton, entailing vast expense, but the sheep of the country have been left to their fate, apparently on the assumption that a specific tariff on grease wool would alone prove sufficient for their protection. This difference in the treatment of the raw materials for two great textile industries is easily explained. A shortage of cotton is immediately made known to the public because there is no substitute for that material. As a result the government has been led into caring for the cotton growing industry to an extent that is not equaled in any other branch of business.

A shortage in the case of wool, however, is discovered only with the greatest difficulty. This is because of the great variety and quantity of wool substitutes. Shoddy, waste, cotton, silk waste, all are used in the manufacture of wool goods, and as a result a shortage of wools is never disclosed by a shortage of the finished product. During the past year, however, there have been indications that wool growing in this country was a declining industry. The rapid increase in the importation of wool, 312,131,171 pounds in 1909, as compared with 142,559,384 pounds in 1908, along with the lack of any indication of an increase in the domestic clip, has shown plainly that the domestic industry was not meeting the needs of the country. And from time to time the abandonment of sheep ranges in the West has supplied additional proof that something was wrong with American wool growing. Last month a dispatch in the daily press from Haycreek, Ore., announced that one of the largest sheep ranges in that State was to be abandoned. It occurred to us that the reason for such a step on the part of the proprietors might shed light on the difficulty with wool growing, and accordingly we sent the following letter of inquiry:

Feb. 2, 1910.

The Haycreek Ranch, Crook County, Ore.

Gentlemen: I enclose copy of a newspaper item and would appreciate it very much if you would advise me whether the statements made are correct. I should also be glad to have you give any further information regarding the matter that you would care to have published. The difficulties which the wool growers are having with the government in regard to grazing are of general interest because of the necessity for providing a supply of wool for our manufacturers. We want to be sure of our facts before making any comment.

To this we received the following reply:

Haycreek, Ore., Feb. 15, 1910.

Editor Textile World Record:

Dear Sir: Your favor of the 2d inst. received today on my return here, and replying would state

that the report you refer to is correct in the main only that instead of 20,000 sheep, we have about 27,000 head, to which will be added this year's increase, which will be ten to twelve thousand lambs.

We have been grazing our sheep in the Blue Mountains for over thirty years prior to the establishment of the forest reserve some five years ago, which reserve covers practically all of our old range. We have been cut down in our grazing privileges every year since the establishment of the reserve, until we are now allowed only a number that makes it unprofitable to operate our plant. We received notice that the reductions are not yet down to the basis on which the Forestry Department proposes to put it in the future.

As we cannot operate without a summer range, and as this part of the business is regulated by the government officials, we have concluded to go out of business, and will offer the entire holdings in the late summer after the sheep are out of the mountains.

The Baldwin Sheep & Land Co.

It is evident that in this particular case the restrictions enforced by the government in the use of the public lands is responsible for the Baldwin Sheep & Land Co.'s giving up sheep raising.

In the more thickly settled portions of the country the killing of sheep by dogs is advanced as the reason why the business does not keep pace with the growth of the country. Whatever may be the causes of the decline, it is beyond question that the situation deserves the careful attention of both State and national authorities.

Gambling on Cotton Exchanges.

During the past month the daily press has been enlivened by reports of hearings before the House Committee on Agriculture on various bills for regulating or abolishing the trade in "futures" on produce exchanges. Witnesses, members of the Committee and visiting Senators have been engaged in a continuous wrangle over a measure involving technical problems which for inherent difficulty and intricacy, are probably unequaled in any other bill pending before Congress. Despite the abuses which have grown up, dealing in "futures" is an essential in the cotton trade. It is of the greatest importance that this trade should be regulated. Rules for its proper regulation can be formulated only by men with practical experience in the cotton trade and after long and painstaking study of the question in all of its various aspects. The Hughes Committee, of which so much was expected, was in a great measure a failure. The report by Commissioner of Corporations Herbert Knox Smith is of great value and marks a long step in the solution of this difficult problem. What is needed now is the reference of the question to a competent commission which will after careful investigation formulate rules for regulating the trade of "futures" on exchanges. Then it will be time to ask Congress to incorporate such rules into law.

Keeping Baled Wool Free from Jute.

Last year representatives of the Australian and English wool trade, including the wool spinning industry, gathered at Bradford, Eng., and discussed the question of preventing jute and other vegetable fibers from getting into wool by reason of the raveling or fraying of the bagging used for wrapping on the bales. Among the remedies suggested at this conference were: better canvas and sewing twine, the use of bags, lined with wool, cotton or paper, dyed bags, and string, glazed bagging, singeing the bagging, and metal fasteners for closing the bag. None of the suggestions offered at the conference have been adopted by the trade, the initial difficulty in nearly every case being the expense, which the Australian wool growers were not willing to bear.

In the meantime experiments were being carried on by a number of wool dealers in Australia to overcome the difficulty, and recently two Melbourne dealers have patented a process of treating the wool bagging to prevent fraying and raveling. They claim that it is effective and inexpensive. Another advantage is that bags and wrapping now in use can be treated, thus enabling the new method to be introduced without the necessity of throwing away any of the serviceable bagging now in use.

The number of cotton spindles in Germany increased from 8,000,000 in 1900 to 10,163,000 in 1909, or 27 per cent.

The Postage Rate on Magazines.

The proposed increase in the postage rate on magazines and periodicals has led to such a thorough investigation of the whole subject of the Post Office income, expenses and administration, that in all probability there will be a wide sweeping reform in the methods of conducting the business.

The Postmaster General, in his annual report, presented startling figures in connection with the expense to the government of carrying second class mail and the loss incurred over the income received. The President alluded to this matter in his message to Congress and thus focused public attention on this subject of general interest, for there is hardly an American man or woman who would not be affected by an increased postage on magazines, which would mean increased subscription prices.

Undoubtedly the Postmaster General's figures were prepared for him in good faith by subordinate officials, but their accuracy, basis and conclusions have been shown by investigation to be questionable. The business of the Post Office Department amounts to the enormous sum of $200,000,000 a year. The methods in vogue are largely those of thirty years ago, when the business was very much smaller.

In 1907 a Congressional Committee, known as the Overstreet commission, made the most careful and elaborate investigation of Post Office affairs that has ever been undertaken. Their report on the subject was most enlightening. They entered upon their task with the evident idea that a revision of the postage rates, particularly in regard to second class or magazine rates, was desirable. At the completion of their work, they made a report in which they stated:

"Your Commission believe that the reorganization of the business and accounting methods of the department must precede, rather than follow, a new adjustment of revenue and expenditure, for the reason that the very object of the accounting reorganization is to furnish the data which are an essential prerequisite to an intelligent revision of rates of postage on the one hand and rates of compensation on the other. The classification of mail matter, especially in relation to newspapers and periodicals, being the very base of the system of postage rates, your commission do not for the same reason alter the existing law in that regard."

As a result of this investigation, a postal bill was prepared and reported to the last Congress too late to be acted upon. It was known as the Overstreet bill and it embodied some very important reforms in administration, which are calculated to have a marked effect in improving the service and reducing expense.

Had this bill been adopted, the deficit would probably have been wiped out, although the bill did not increase the postage rates on any classes of mail.

The Postal Committee of the present House of Representatives, after giving careful consideration to this subject in view of the President's recommendations, and after extended hearings on the interests involved, have reported to the House what is practically the Overstreet bill. They have wisely availed themselves of the labor and conclusions of this commission, while at the same time embodying some recommendations of their own.

Both from the subscribers' and publishers' standpoint, it is to be hoped that the bill will be passed by the House of Representatives and the Senate without changing the present rates. It will be a great step toward a business administration of the greatest business department of the government.

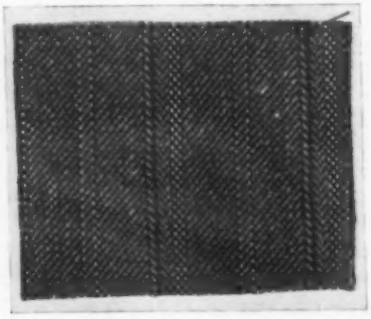
There has been a false impression created by the newspapers (whose postage rate has not been threatened) that publishers are enjoying subsidies or privileges because of the low rate of postage. As a matter of fact, when this low rate of 2 cents per pound was inaugurated in 1879 and still further reduced without the suggestion of the publishers to 1 cent per pound in 1885, the benefit of the low rate was passed on by the publisher to the subscriber. The older generation will

remember the time when the subscriber had to pay the postage in addition to the subscription price, but after the low pound rate took effect, the publisher assumed the postage and has since prepaid it.

It is to be hoped that no legislation will be enacted that will cause a change in existing conditions, which are so firmly established as to make any radical change almost revolutionary.

Undervaluation of Wool Goods.

There have been persistent complaints during the past few months that imported wool goods were being sold in New York at prices that meant one of two things, undervaluation or a loss to the importers. As importers are not in the habit of doing business at a loss the assumption has been that wool goods were being passed by the New York Custom House at false valuations. One of the complaints was brought to our attention in definite form by a letter from a manufacturer who gave the price of a worsted cloth which was being imported at New York in large quantity, and asked us to find out if possible at what price the cloth was



A SAMPLE OF ENGLISH WORSTED.

sold at Bradford, where it was made. Our informant stated that the goods, of which one pattern is shown in the illustration, were sold in New York at $2.00, 10 per cent. off 10 days, or 7 per cent. off 4 months, netting $1.80 per yard, 56 inches wide. We began our investigation by analyzing the same, with the following results:

Warp, 80 threads 2/46s worsted per inch.
Filling, 71 threads 2/48s worsted per inch.
Weight, 10 1/4 ozs per yard, 56 inches.
Weave, 4 leaf twill.

We then sent the sample to our Bradford representative with a request that he find out the price at which the cloth could be bought in that city. In due time we received from him the following report, from which we have omitted the name of the manufacturer:

Bradford, Feb. 3, 1910.

I have put your sample of worsted fancy before half a dozen competent people, all of whom tell substantially the same tale. One man did think that he could place an order at less than 3s. 6d., but this is doubtful and on the balance of authority 2s. 6d. is the rock price. I find shippers of tropicals of similar weight and quality paying 3s. 6d—4s. today.

A manufacturer who has not a cloth exactly like the sample says his price would be 3s. 9d. to 4s., and he thinks it likely that a large firm specializing on this line, cutting prices and catering for the very biggest quantities might do the cloth at 3d. or 4d. less than himself and have a small profit. The big man would reckon his black yarn at a lower price than his white and work off ten cut standard warps. I think I have explained previously that quotations for this class of stuff vary widely. For 11-ounce goods perhaps with more twist threads, with the most perfect yarn, the best obtainable finish and everything handsome about it, some Huddersfield firms would want 4s. 9d. and would get it for small quantities for the exclusive trade. A customer may order no more than a single piece from them and of necessity they have to add cost of design, warp dressing, twisting-in, delay, etc., to the first order. Firms like X, who cut these goods as fine as anybody, prepare for thousands of pieces and act accordingly.

It is evident from this report that the goods are sold in quantity for export at 3s. 6d. (84 cents). At this price they would cost duty paid at New York:

At Bradford	$ .84
Compensatory duty	.30
55 per cent. ad valorem	.46
Duty paid at N. Y.	$1.60

To this must be added the cost of freight and other charges, which, however, would be but a few cents a yard. It follows that at $1.80 at New York the cloth would yield a profit to the importer after the duty had been paid on a fair valuation. It is of course possible that wool goods are being undervalued

at the custom houses, but the facts we have sifted out regarding the case brought to our attention leaves no escape from the Scotch verdict, "Not Proven."

Subsidized and American Cotton.

The British government has promised to grant a subsidy of $50,000 a year to the British Cotton Growing Association. The English Federation of Cotton Spinners has promised to contribute $375,000 more. At the same time an appeal for funds is being sent out to the British public, the object being to obtain contributions from shopkeepers and others indirectly interested in the prosperity of the cotton trade. A special effort is being made to get contributions from the cotton mill operatives, and it is proposed to adopt a plan similar to that followed during the Indian famine, when the working people in all industries were asked to pay a monthly contribution of one penny each for a period of fifteen months, making a total contribution of 1s. 3d. (30 cents) for each operative. In addition to passing the hat among the mill hands, the British Cotton Growing Association decided to approach the various Chambers of Commerce throughout the country. A few weeks ago this appeal for money came before the Chamber at Burnley. It aroused Thomas Crook, a cotton manufacturer, who protested vigorously against the short-sighted policy of confining to British colonies the efforts to increase the world's cotton supply, and urged that the work of the Association be made international in scope. His remarks are reported by the Textile Mercury as follows:

> Mr. Crook did not believe in any attempt on the part of the government to encourage any trade, either by means of protected duties or by subsidies. If a trade could not stand fair and open competition, and prosper and increase on that basis, the probability was that it must end in failure when the assistance was withdrawn.
>
> Mr. Crook thought the word "British" should be taken out of the name of the Association. What the trade wanted was more cotton, and they did not care whether it was British or American. Any society ought to be encouraged, whether its object was to grow cotton in British territory or in any other territory. They should go where they could get the best results.
>
> A company with a capital of half a million, if it were started on commercial lines, would produce, without any government assistance, a great deal more cotton, and would pay its promoters a return on their outlay. In the Mississippi Valley capital was required for the development of land upon which could be grown the very best staple cotton, and all the country was adapted and systematized for cotton gorwing. Labor was ready, and if a company went out there every facility would be given by the government of the United States. Everybody was in favor of that land, of which there were millions of acres, being developed for cotton growing. Land upon which could be grown cotton fit to spin 60s twist could be bought at £5 an acre.
>
> The restriction of the Association's efforts to British territory was objectionable; there were many places where cotton could be produced outside our own territories with better results. The Association made it appear that Lancashire would have to depend on that Association for its cotton. If that were so, according to the Association's rate of progress it was going to be a very bad job for Lancashire, for the increase due to them was only 25,000 bales in six years. If the Association would increase its territory it would produce better results, and more subscriptions would be obtained. Still, the Association was worthy of support, and he hoped Burnley would lend a helping hand. There was room for several associations of its kind.

It is gratifying to learn that British common sense has at last found a spokesman. For five years there has been practically no one to give expression to what is unquestionably the sober sense of the British public, that the best way to increase the world's cotton crop is to develop the resources of the American cotton belt on a commercial basis, without the aid of any subsidy. The plan of dropping "British" from the name of the Association and carrying on the work both inside and outside of the United States is unsound. Excluding Egypt and India from consideration the growing of cotton in the United States and in British colonies presents two radically different propositions. Here it is an industrial and commercial enterprise, with success assured by the exercise of ordinary business sagacity. In the British colonies it is and will remain a hothouse industry, offering no inducements to individual enterprise, and certain to result in failure when the government prop is removed. Two methods of growing cotton so fundamentally different cannot well be con-

ducted by the same organization. Let the British Cotton Growing Association, which has a production of 25,000 bales of British colonial cotton to show for a share capital of $1,345,000, collected from the British public during the past six years, retain its name "British," and continue its work to the inevitable end. On the other hand let the world's cotton crop be increased by developing the American crop under commercial conditions free from government subsidies.

A Uniform Sales Contract.

The effort to eradicate abuses that have grown up in the selling of cotton goods was furthered last month by a conference at the Waldorf-Astoria, New York, of prominent representatives of cotton manufacturing and merchandising. The proposition before the conference was the adoption of a standard sales note or contract, the following form having been offered as a basis for discussion:

CONTRACT SALE NOTE.

(Form approved and adopted by The National Association of Cotton Manufacturers and American Cotton Manufacturers' Association, 1909.)

Sold for Account of.....

To .....**Number** .....

Quantity

.....yards (variation not to exceed two per cent. allowed)

.....pieces of.....yards each

.....bales of.....yards each

In addition, buyer to take..% Seconds at and seller to deliver if made..% Tailings at stated contract price if contract is not renewed.

Quality

Time of Delivery .....from date hereof.....

.....during each week, commencing week ending....

.....during each month, beginning in the month of....

(Delivery within two days before or after times specified above is allowed.)

Count per Inch.....Warp.....Filling.....

Weight.....**Yards to the Pound.**

Width in Inches.....**Cents per Yard.**

Terms of Payment:

Net....days from date of delivery.

Net....days from date of delivery less..% for payment within....days from date of delivery.

Place of Delivery:

F. O. B. to carrier at.....with.....freight allowance.

F. O. B.

Special Conditions .....

Shipping Instructions:

If the production of the seller shall be curtailed during the time above named, by strikes, lockouts or unavoidable casualties, the deliveries shall be made and accepted in proportion to the production.

The provisions of paragraphs I, II and III, and the allowable variations from specifications as adopted by The American Cotton Manufacturers' Association and The National Association of Cotton Manufacturers, all as printed on the back hereof, are accepted and agreed to as a part of this contract, unless otherwise stated herein.

This sale note is the entire contract between the buyer and seller, and any alteration in or changes from the printed form of this contract must appear on it in writing.

To .....

.....Broker.

[Over]

Paragraph I.—**Passing of Title on Delivery.** Unless otherwise specified, the title to goods sold passes to the buyer subject to the right of stoppage in transitu:—

a.—Upon delivery F. O. B. to carrier, consigned to buyer, and thereafter goods are at buyer's risk.

b.—Upon arrival of goods at destination and delivery to buyer of bill of lading or of goods, in the case of goods to be delivered F. O. B. elsewhere than to carrier.

c.—Upon delivery of indorsed bill of lading or of goods, in the case of goods consigned to seller's order.

d.—Upon the separation of the goods and holding subject to buyer's order (the invoice to follow by due course of mail), in the case of goods to be held or if the buyer fails to give shipping instructions.

Paragraph II.—**Free Storage.** Sixty days' free storage allowed on goods invoiced and held, the same to be at buyer's risk, but to be covered by fire insurance effected by seller in reputable companies.

Paragraph III.—**Rejections and Claims.** The buyer cannot reject the goods for delay in delivery unless he notifies the seller within two business days from receipt of bill of lading, or of invoice if goods are to be held. When contract calls for delivery in instalments, the buyer cannot cancel the contract for any default in any one or more instalments not amounting to a substantial breach of contract.

Buyer cannot reject goods for defects in quality or other like defaults (a) if he cuts or converts them, nor (b) unless he notifies seller within thirty days from receipt by him or at finishing works of goods not held, or within thirty days after expiration of period of free storage if goods are invoiced and held; nor (c) unless such defects amount to a substantial breach of contract.

Loss of right to reject does not deprive the buyer of his right to claim damages, if any; but no recovery shall be had on any claim not made within one year from receipt of goods or beginning of period of free storage.

ALLOWABLE VARIATIONS FROM CONTRACT SPECIFICATIONS

Width. The width shall not vary anywhere by more than 3/8 of an inch below the stipulated width, nor more than 5/8 of an inch above. The width shall not be uniformly less than the stipulated width, but must, at least in some places in each piece, be equal to, or greater than, the stipulated width. Goods shall be measured at right angles to the selvages when laid open on a flat, horizontal surface and smoothed out by hand, but not stretched.

Warp Count. Except within four inches of each selvage (where the count must approximate that stipulated), the number of warp threads per inch shall not vary anywhere by more than one thread per inch below the stipulated count, nor by more than two threads per inch above. The number of threads per inch shall not run below the stipulated count throughout the piece, but must at least in some places in each piece, be equal to, or more than the stipulated count.

Filling Count. The number of threads in the filling, or weft, shall not vary anywhere by more than three threads per inch below the stipulated count, nor by more than four above. In the case of sateens, however, when the count of filling exceeds the count of the warp, the allowance for variation above specified shall be increased by the same percentage that the filling count exceeds that of the warp count. In any case the filling count

per inch shall not run below the stipulated count throughout the piece, but must, at least in some places, in each place, equal or be more than the stipulated count.

Weight. Goods shall not vary from the stipulated weight on either side by more than 4 per cent. in any one piece, or 2 per cent. in the average of any bale or roll. In case of controversy regarding the weight of goods, decision shall be based on goods which have been exposed for 24 hours to normal atmospheric conditions approximating a temperature of 70° F., and a humidity of 70 per cent.

The word piece, as used above, refers to a length of about 50 yards.

Lewis F. Parker, president of the American Cotton Manufacturers' Association, presided at the conference and in his opening address laid stress on the need of a fair basis for the sale of cotton goods. He stated that, while the contract submitted for discussion was undoubtedly imperfect, it had been framed with the object of being fair to both buyer and seller, and it was desired that those present would express their opinions freely in order that imperfections might be pointed out. Remarks in favor of the adoption of some form of standard contract were made by A. F. Bemis of the Bemis Bros. Bag Co., Meyer Stern of J. S. Bernheimer & Bro., F. B. Macy, treasurer of the Soule Mill, New Bedford, Mass., H. de F. Lockwood of the Pacific Mills, Lawrence, Mass., Ellison A. Smyth of the Pelzer Mfg. Co., Pelzer, S. C., E. S. Twining of Clarence Whitman & Co., New York, I. B. Tiedeman of the Southern Cotton Mills and Commission Co., F. A. Flather, treasurer of the Boott Mills, Lowell, Mass., and D. M. Bates, assistant superintendent for Joseph Bancroft & Sons Co., Wilmington, Del.

W. H. Oakley of the domestic department of H. B. Claflin & Co., New York, spoke in opposition. He believed that a memorandum of goods purchased and of deliveries to be made was all that was necessary. He stated that his company had never gone back on a contract, and from this the inference was to be drawn that a sales contract was unecessary in the cotton trade. The overwhelming sentiment of those present was, however, in favor of some standard contract by which the details regarding the sale of cotton goods would be defined, with the object of eliminating abuses and disputes from the trade.

High Prices at Bradford.

It is not alone in the United States that the high prices for wool are causing uneasiness among traders and manufacturers. At Bradford there is a disposition to go slow and spinners are reported to be buying only for actual requirements. At a recent meeting of the Bradford Chamber of Commerce President Law called attention to the high prices and gave this note of warning:

> The only drawback I can see is the rather high price here for raw material in the wool trade. Prices being high, traders generally seemed disposed to be rather careful. Sometimes a little cloud appeared on the horizon and spreads, and before we knew it we found ourselves involved in its mists. It behoved us to walk very warily, and to take great heed to what is happening. The prosperity of Bradford is bound up very largely with reasonably low prices for raw material.

The International Cotton Federation.

During the excitement over the advance in cotton last October when cablegrams were flying thick and fast between Europe and America with a view of bringing American spinners into the scheme of organized international short time, the executive committee of the International Cotton Federation met at Frankfort, Germany, and decided to send Arno Schmidt, the secretary of the federation, to India to study the situation in that country and enlist the cooperation of Indian spinners. Mr. Schmidt returned to England last month, after having induced the cotton spinners' associations at Bombay, Cawnpore, Agra, Delhi, Calcutta, Madras and the South of India to join the International Federation. Indian experts in cotton growing assured Mr. Schmidt that the Indian crop could be increased to 10,000,000 bales within five years, "a quantity that would have a powerful influence on checking American speculation."

Raw cotton is the largest single import of Germany, and manufactured cotton the largest export. Germany is the second largest importer of cotton in the world and the second largest exporter of cotton goods.

A Philadelphia Wool Dealer's Trip to South America.

BY PATAGONIA.

With many misgivings as to my ability as a sailor, I boarded the White Star liner at New York bound for Liverpool, the initial 2,800 miles of a long sea voyage to the Argentine Republic. Promptly the last rope binding us to shore was cast off and with the slight assistance of a fussy little tug, the great ship moved from her berth, and in a remarkably short time we were slowly steaming down the river towards the open sea.

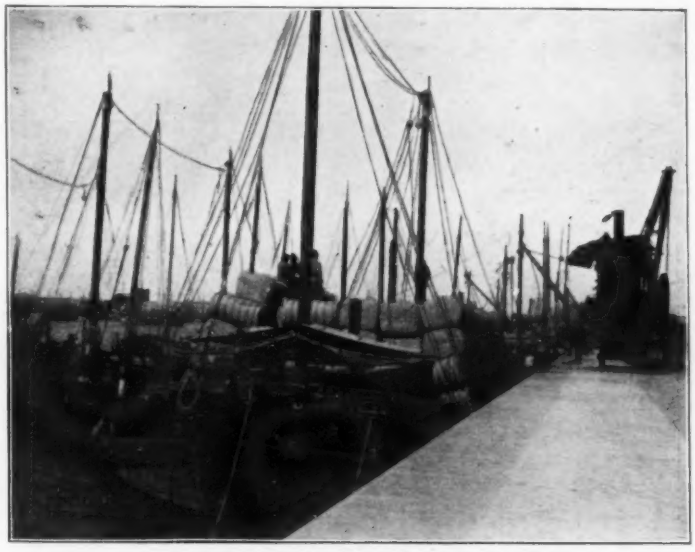
About the middle of the morning of the seventh day at sea the ship slipped out of a haze and before us we saw the bold headlines of the Irish coast and within two hours were off Daunt Rock light ship. Shortly Queenstown harbor was before us and the pert little side wheel steamer "Ireland" was steaming to meet us with the English papers and mails, also to supply us with fresh fish and to take off some of the passengers. We were informed that we would land in Liverpool the following morning at eight o'clock, so then began the busy time preparing to leave the ship. The first trippers were anxiously inquiring of the seasoned travelers which of the stewards were to be tipped and the size thereof. The matter was settled with half a sovereign to each. Then when about to leave the ship a young man saluted saying, "I'm Boots, sir. Don't forget Boots." So Boots got his also.

PASSENGERS EMBARKING AT PERNAMBUCO, BRAZIL

The ship was at the landing stage on time, the passengers were disembarked and their baggage put ashore at the custom house almost as soon as they were ready for it. The baggage is easily found and the short custom's formality completed. Tobacco, spirits and perfumery are the only things the officers inquire about, and if one owns up to a few cigars there is no trouble getting through. Calling a cab and loading baggage on top, we precede to the railroad station, where with a series of small tips to porters and others we were put into a little car en route for Bradford.

Bradford is rather a dingy city, made so by the soft coal used by the many factories in operation there. The streets remind one of Boston as they are not laid out with any view to straight lines and are built on a series of hills. It is here that a church which was built in 1200 A. D. was defended from Cromwell's soldiers by piling sacks filled with wool about it.

A visit to the Bradford Exchange on a market day when manufacturers and wool



A LIGHTER LOADED WITH WOOL BALES.

dealers meet was interesting. It might be expected to see a lot of very excited men rushing about waving their arms and shouting offers, and I was somewhat disappointed to see only two or three Englishmen talking together in pairs or groups with none of their merchandise exposed for sale, although no doubt large transactions were made in a low tone of voice. Two pounds a year is the cost of membership. The privilege of meeting one's customers on a common ground at least twice a week is surely worth the price and the idea is one that might be worked up to advantage among American manufacturers. At the back of the exchange on the street is the "Curb," where the non-members meet their friends. All too soon was I forced to leave for Southampton and there embark for the three weeks' voyage to Argentine.

The Royal Mail ship was of ten thousand tons and, although small as ships go nowadays, was plenty large enough and very comfortable. On taking stock of the passengers after the ship sailed I found many nations represented, Spaniards, Portuguese, French, Germans, English and a few Americans.

About five hours' run brought us in sight of the French port of Cherbourg. As we approached we could gradually make out the great sea wall of masonry which appeared to be at least two miles in length. At the end of the wall near the harbor entrance was a circular fort on which were mounted guns, and it was soon discovered that at intervals along the entire wall were barbettes of five guns each and all pointed hospitably in the direction of England.

At daylight the following day we were off Cape Ushant, France, and at noon were well into the Bay of Biscay. This route is in the well traveled path of the world's trade with India and South Africa, so there were many vessels in sight all the time, too many in fact to run so near together in heavy seas, and the wonder is that there are not more

disasters. Making the acquaintance of the English-speaking passengers is an easy matter, as the Englishman who travels is most courteous and goes at least half way in this respect.

By the next morning the Spanish Cape Finesterre was in sight and hanging about us all day were fifteen or twenty steamers of various sizes. Steaming several hours along the bold headlands of the Spanish coast we at length made the entrance of Vigo Harbor. Passing between two headlands so close to one shore that a biscuit could be tossed to land, we proceeded slowly up the beautiful harbor, which surrounded by hills and capable of harboring an immense fleet, and so situated that it could be made impregnable if Vigo was important enough for the outlay. It was at this point that the Spaniards sunk a vast treasure in gold, £8,000,000, to keep it out of the hands of the English fleet under Admiral Blake.

Our ship dropped anchor within a few hundred yards of the shore and was immediately surrounded by a large fleet of small boats filled with men, women and children of all ages and sizes of the peasant class, emigrants for South America. All were shouting and crowding at the gangway until it seemed as if some must be pushed overboard. They carried baggage of all shapes, sizes and degrees of cleanliness, some with their worldly possessions in a flour sack while others were the proud possessors of an ancient trunk.

In about three hours our mud hooks were brought aboard and the ship was under way for its next stop, Lisbon, where coal was to be taken and passengers given shore leave. By daylight we were in sight of the Portuguese coast and it was not long before the mouth of the Tagus River came in sight. Half an hour before breakfast we were slowly steaming up the river passing several small villages which, with their red tiled roofs, looked very picturesque against the background of green foliage. By nine o'clock the ship was at anchor and surrounded by coal barges and other crafts. Purchasing a ticket from the purser for two shillings one could go ashore in the large barge which presently came along side of the ship. Several hundred passengers availed themselves of this opportunity.

LAUNCHES ABOUT THE STEAMER IN RIO HARBOR.

The streets of Lisbon are paved with cobble stones, while most of the sidewalks are of flat stones set in cement like mosaic. On the principal streets are many nice shops,

while on the side streets may be found the small meat stores and wine shops. Nearly all the stores expose lottery tickets for sale and there are vendors of the same on every street corner.

We were obliged to return to the ship at 4.30 and at 9 P. M. we were under way and soon left the city with its terraced rows of twinkling lights behind us on our next run of twenty-four hours to Madeira. It was a study to watch the misery and happiness among the steerage passengers of whom we had by this time about five hundred. They were packed in like sardines. Men, women and children all slept and ate together with not much of any privacy. Many had never been to sea before and were miserable in the heavy seas the ship encountered. Some would dance the native peasant dances to the accompaniment of an accordian. This class of passengers is a source of profit to the steamship company as they receive £8 a head for the transportation. Their feeding is an easy matter as it takes but little to satisfy them.

At daylight we were in sight of the Madeira Islands and through a bright blue sea the ship slowly made her way along the rough shore. In the distance the city of Funchal could be made out in a blur of white. Gradually the buildings took shape and we were shortly at anchor before this beautiful town built on the slope of a mountain. For ten shillings one obtained from the purser a ticket with coupons entitling the holder to transportation to and from the shore, a ride on the cog road up the mountain, breakfast at the hotel on the summit, and a slide down the mountain on a toboggan over the flint paved roads. As the ship was to stop but four hours we were eager to get ashore and went in the first boat resolving to enjoy the experience of getting about alone in a foreign port where a strange language was spoken. Landing at the quay, I was presently taken in hand by a young man who escorted me to an automobile when I was speedily whisked to the station of the cog road. A short wait and the climb began. As we proceeded slowly up the mountain, children ran along side of the car throwing flowers at the passengers and begging pennies. These youngsters seemed to work in relays as we were constantly seeing new faces. The scenery was beautiful. We passed vegetable gardens built in terraces on the mountain side with walls faced with stone to prevent the rain from washing the soil down the mountain, vineyards with their ripening fruit and an occasional banana grove. Near the summit we skirted along the edge of a deep canyon, the sides of which were a series of vegetable gardens. The view from the summit was very picturesque. The town with its white buildings and red tiled roofs, the beautiful green of the tropical vegetation, and the ships at anchor in a sea of bright blue, made a picture long to be remembered.

After breakfast we proceeded to the waterfall where there was a beautiful fall of about thirty feet into a large pool and from the sides of the rock spouted springs adding their water to the pool below. Returning to the station I waited awhile trying to make up my mind about taking the toboggan down the mountain. I was assured in several languages, including English, that it was very safe. It did look perilous with the flint roads at an angle of dangerous degree. After witnessing the departure of several tourists I took my seat in one of the toboggans. The body of the car was of wicker work and set on heavy wooden runners shod with steel. The car is guided by an attendant who rides standing on the runners and at very steep places drops off and drags behind holding the rope which is attached. After getting well under way the craze for speed seems to take hold of one and I deeply resented the drag act of the man behind when we came to places where the road took a sharp angle. At times we traveled very fast and as the car sometimes slewed one could see where there might be a bad bump if the car landed against the side of a house.

(To be continued.)

In 1908 Germany imported 1,980,274 bales of cotton and exported 222,606 bales. During this year the value of imports and exports of cotton goods was $46,037,292 and $104,945,862, respectively.

SHEEP RAISING IN NEW ENGLAND.

Boston, Mass., Feb. 15, 1910.

Editor Textile World Record:

So much has recently been said about the sheep raising industry in New England that I am led to give you the results of some observations that I have made in raising sheep in this country. New England has undoubtedly some advantages over the arid West in the growing of wool. Here we have a good supply of water and can raise enough hay and grain on a 350-acre hill farm in Vermont to keep from 300 to 400 head of sheep. The sheep-killing dogs have been, and still are, the principal drawback to keeping sheep in the East. I believe, however, that a farm fenced in with hog wire fence will overcome the difficulty with dogs. One man with a good dog can care for the sheep in the pasture. They need plenty of salt and should be dipped twice in the fall to prevent disease. The claim is made that a daily allowance of 2 pounds of hay and 4 ounces of grain will keep a sheep in good flesh during the winter months when they are carrying the young. It is well to give the sheep as much out door exercise as possible. If they are kept inside they will have heat and running at the nose, but will remain in a healthy condition if they are allowed to run freely outside.

I believe that 300 head of well bred Shropshire ewes with Rambouillet rams will, with good care, prove to be a paying proposition in New England. The best mutton market in the country is near the farms and the lambs and old ewes will be fat in the fall and ready for the butcher. The flock will yield an average of 6 1/2 pounds of wool per head, a total of 2,000 pounds, which, at 30 cents a pound, would yield $600. The lambs at present prices would bring about $4 each. It is my judgment that the flock would give a good return on the investment after all expenses, including fair wages for one man, are paid. In addition there will be the possible increase from twin lambs and the advantage from fertilizing the pasture land. A good plan is to plow up the land and sow clover seed, then turn it under and sow. This will give strong grass for the young lambs and mothers when it is needed. It may seem a difficult proposition to get so much winter feed ready, but there is no success obtained in any enterprise without labor and worry. One great advantage which a New England sheep farm has over the West, is that here we would not have to ship the stock 1,200 miles to market, running all the risks of transportation, including the unavoidable shrinkage of about 5 pounds a head on the way.

If a young New Englander would take up several of the cheap farms and start raising sheep and if he would work as many hours and as diligently as he is forced to work in the factory, he would become independent in a few years. I believe that with 300 head of sheep on a New England farm a man would be able to save $1,000 a year. The sheep raisers in the West must contend with coyotes and wild cats that devour many sheep in a year. Again it is necessary there to drive the sheep many miles to reach the feed and water. If the winter is severe or dry the ewes cannot nourish their young, because they cannot get feed on the plains in the arid country. The sheep herders in the far West do not have barns or even tents for the sheep to lamb in. As a result when a storm comes, as is often the case during the lambing season, a large proportion, sometimes reaching a third, of the lambs are killed.

It costs from 85 cents to $1 a head per year to run a band of 2,000 sheep in New Mexico. It is necessary to keep two or three men all the time, night and day. The same is true of Washington, where they pay the herders $50 a month and board. The Washington herders depend largely upon their dogs, while the Mexicans depend on themselves. The herder in the West takes his camp tent and cooking utensils with him and has his provisions carried to him at intervals during his run with the sheep. A good herder never leaves his flock alone.

Let the same care and business principles be applied to the raising of sheep in New

England and the result will be a paying investment. The Persian or Tunis flat tailed lamb is quite popular as an early lamb. It grows fast and the flesh has less of the sheep taste, which is so objectionable to some people. The wool is rather coarse and does not bring as good a price as wool from Shropshire and Rambouillet. The meat is fine and tender, but I would not advise keeping many of them as the yield of wool is not as large as from other breeds.

Good sheep land can be bought in New England within 5 miles of large towns, while in the West a sheep herder must go out 50 miles to get land on which to feed his sheep. WILLIAM WHITE.

Meeting of the Southern Textile Association.

The meeting of the Southern Textile Association at Columbia, S. C., on Feb. 19, was the most satisfactory in the history of that organization. Over 250 members were present and the proceedings were marked by enthusiasm and a strong interest in the unusually instructive papers read before the convention.

This was the fifth quarterly meeting and included afternoon and evening sessions. C. F. McCall, president of the association, opened the afternoon meeting with a few preliminary remarks and then introduced as the first speaker Gen. J. D. Frost, who delivered the address of welcome in the absence of Mayor W. S. Reamer. Gen. Frost said in the course of his address that the latch string of the city of Columbia was on the outside of the door and invited the members of the association to avail themselves of that privilege to their heart's content. He drew a splendid word picture of the early development of the textile industry in Columbia from the building of the Granby Mill when the city had but 16,000 inhabitants, down to the present, and alluded with pride to the fact that the population of 40,000 was in a large measure the result of the development of the textile industries. He urged upon his audience the necessity of better education among the mill people, and referred with genuine interest to the modern mills and villages which surround the beautiful Capital City of South Carolina. Gen. Frost's sincerity was evident and he received the prolonged applause of the members at the conclusion of his address.

N. T. Brown, ex-president of the association and superintendent of the Pilot Cotton Mill, Raleigh, N. C., responded to the address of welcome in a few well chosen words. He paid his respects to the men who operate the textile plants of the city and referred in complimentary terms to the mills themselves.

The reading of the papers was the next part of the program. J. M. Davis, superintendent of the Newberry (S. C.) Cotton Mill, read the following interesting paper:

The Development of Welfare Work.

BY J. M. Davis.

I propose to discuss this subject from the aesthetic, the spiritual, the moral, the social and the physical standpoints. I am aware of the fact that this sounds quite presumptuous, but the more I have studied the deep and practical solicitude which the officials of the Southern cotton mills have exercised for their loyal employes, the more imperative has seemed to me the necessity to consider this question from the five view-points mentioned a moment ago. To omit any one of these five phases of this subject would be to come just that far short of getting a comprehensive view of what has been and is being done.

It will be necessary for me to avoid going into details, and to be as brief as is consistent with clearness. It will neither be my purpose to flatter ourselves nor to try to answer the multitude of ridiculously silly criticisms heaped upon us by those who are not conversant with existing conditions. It would be unChristian in me to prevent those fluent magazine writers, who offer this criticism, from making a living if they can find readers willing to pay them for their ignorance. I shall confine myself to such facts as I know to exist through my own personal observation, or through such authentic sources as cannot be questioned.

It is not stating the fact too broadly to say that every successful and progressive cotton mill official today is deeply and vitally concerned about the higher ideals and the all-round development of the whole personnel of the mill village. These people are not becoming, but have already reached a point where they are among the most useful

citizens of this rapidly developing section of manufacturing industry. It is not a new thought so much as the possibility of carrying out an older belief that it was necessary to have ideal surroundings in order to have healthy, happy, prosperous and contented employes.

It is an injustice to the men who have been managing and developing the cotton industry of the South to insinuate that this great burning truth as well as a necessity is just now beginning to warm up the heart and consciences to these men. The prostrate South of only a few years ago, working out her own salvation slowly but

J. M. DAVIS.

surely, is coming into possession of her own; and as the blessings of peace and plenty are smiling upon these sun-kissed hills and valleys—they are leaving no gentler smiles anywhere than upon those hills surrounding the Southern cotton mill.

Strikes unknown, arbitration unnecessary—there is found a people doing an honest day's work and receiving an honest day's salary; willing to live and let live. With no friction having come between employer and employe, their wages have increased within the last few years more than 50 per cent. An unbiased mind must confess that this is worthy of mutual congratulation. In contemplating the subject of "welfare work" I am more and more impressed with the magnitude and almost incomprehensibility of what has already been accomplished, and of the almost infinite possibilities of the future.

In order to more fully appreciate what has been and is being done, it will now be necessary to consider briefly the condition and environment of those who came to the mills ten and fifteen years ago. These people were honest, hardworking people; in most cases extremely poor. In some instances they came from floorless cabins with perhaps only one or two rooms, only one or two small openings in the walls for windows, and a large open fireplace for heating and cooking.

A few old boxes, a chair or two, one or two beds, and perhaps an old table with a couple of chairs and an old slab bench composed the entire household furniture. Their bath room for the morning toilet was the nearby branch. The children had absolutely no advantages. The church and the day school of a couple of months' term were perhaps several miles away. They had no books or newspapers in the home. The sound of music almost unheard except from a home-made catskin banjo. There was little in such a home to foster the higher traits of human character—such as modesty, culture and a desire for social development.

There was scarcely a dream of living a life of usefulness and helpfulness among the fairest of the maidens and the bravest of the youths. They were content to live, breed and die no step in advance of their sires. The teaching that "The life is more than meat, and the body more than the raiment" was a vague, meaningless shadow to their dulled intellects. Nothing but a struggle for a bare existence on a gullied hillside with the crudest methods of farming was the dream of the most ambitious.

The conditions described above may be extreme, yet many came from just such places of abode, while still others, a little more fortunate, were forced to the mill in order to save the old home from being sold under mortgage long past due. There is a transforming and awakening to new life when they move to a first-class mill, and are brought under the influences and permeated with the spirit of "welfare work," which means that so far as possible they shall be brought under protection, shielded from misfortune, sickness, calamity and evil, and shall enjoy health, happiness, prosperity and the blessings of society and civil government. They find themselves under influences which brighten and intensify their lives, and a development of the whole man and woman is the consummate result.

Not only do the poor come from the lowlands and from the mountains seeking a better occupation and a fuller life, but it also happens that a class of people above the average well-to-do class turns to the mill seeking a livelihood because they find there constant work with satisfying remuneration. The constant contact of these two classes one with the other blends the whole into a community that must be respected for its integrity and admired for its honesty. The cotton mill turns out not only yarn and cloth, but it turns out also American manhood and womanhood of a very high type.

Many advantages and improvements have been added to the mill villages within the past few years. Many varieties of shade trees are planted along well laid off streets. Instead of rows of boxed houses that marked the cotton mill architecture in the years following the war, a modern mill village has along these shaded streets splendid

dwellings of different designs, finished well inside and out, painted nicely and of different colors.

The village is thus made to resemble a little town, where individual taste seems to have prevailed. These houses are exceedingly comfortable, and are far better than the average country home. Surface water is no longer used for drinking purposes, but artesian wells are sunk and water is supplied either within the home or within close proximity to it.

Elegant school buildings have been erected, equipped with up-to-date furniture and school fixtures, and supplied with first-class teachers—all by the mill management. Children between the ages of six and twelve are required to attend these schools. Many older children also attend these schools. Night schools furnish young men and girls opportunities to improve in reading spelling, arithmetic and textile studies.

Every modern mill village also has a boarding house which will do credit to buildings going sometimes under the name of hotels. These boarding houses are designed for single ladies or gentlemen, who were formerly forced to seek quarters that were not at all convenient or comfortable. These boarding houses have anywhere from 15 to 25 rooms, equipped with every modern convenience, including bath rooms, parlors, reading room and electric lights, and in many instances steam heat.

The little union church, with its uncomfortable little narrow seats with straight backs, has been superseded by the elegant denominational church, furnished with beautiful pews, electric lights, and in many instances heated with either steam or hot air. Many of these churches support their own minister—taking his entire time. The minister is furnished a well constructed and beautiful parsonage and lives with and among the people of his church. He is as a rule a man of great influence.

Many of the mill villages have well equipped hospitals. In some instances they have taken up this important work at great sacrifice. One of the best hospitals in the city of Spartanburg is the Good Samaritan on the Spartan mill hill. I am not sure but what this hospital was the first hospital erected in that city.

Club houses with reading rooms, where the leading magazines and newspapers and many books are found furnish opportunities for both social and educational development. Politicians can tell you better than I can how difficult it is to fool mill operatives upon public issues. Sitting within the legislative halls of this ancient and historic commonwealth are men who have quit the mill to become statesmen.

These club houses are equipped with excellent gymnasiums, bowling alleys, pool tables, bath and game rooms of various kinds. Library associations, entertainments, fraternal organizations, all help to keep our mill people abreast with modern civilization. Swimming pools for both men and women are being added to the attractions in many mill villages.

Possibly the greatest amusement and enjoyment in a mill village is the national game. Baseball is practically universal among these villages. Some of our cities can learn lessons of enthusiasm, and how to stand by their teams, by watching these mill teams; for I have never seen a mill yet that didn't have the best baseball nine. If they won they did it through skill—that's all; and if they lost it was the umpire's fault.

Another enthusiastic organization encouraged by the mill management is the brass band. Under the able direction of skilled musicians we have developed some of the best brass bands in the South. I have in mind now a mill band of Newberry which had the distinguished honor of being engaged by another State to play for the entertainment of the president of the United States.

Many of our mill villages have beautiful parks set in flowers and shrubbery. I shall make no attempt to describe these parks, as the very word indicates that the mill officials try to bring the beauty in nature together to help develop higher ideals by an appeal to the aesthetic nature. Of course these parks differ in size and beauty; but many of them will do credit to our cities. Here may also be found animals and curiosities that furnish not merely amusement, but lessons in natural history as well. Rustic seats, summer houses and skating rinks make these grounds attractive.

I have tried to show that the aesthetic nature is appealed to and developed by the improved architectural plans of the mill homes, by musical organizations, by the well laid off streets planted in shade trees, by parks with their flowers and shrubbery and walks with rustic seats and summer homes. The mill operative is taught in many ways to love the beautiful, the neat and the clean. If further proof is needed it will only be necessary for the skeptical to visit a department store of an up-to-date cotton mill and examine the class of goods kept. Next the spiritual side is quickened by church facilities and resident pastors. The moral is akin to the spiritual and is developed by the former. But the mill management deserves special praise for the premium they have always put upon morality among the operatives. No woman with questionable character is allowed to stay on the mill hill, much less to secure employment in the mill. The social nature is possibly more highly developed among mill people than among any other class. It is brought about by their frequent associations in the mill itself, by their social clubs, fraternal orders, music organizations and sports of different kinds. The physical man and woman are developed by the very nature of their work under sanitary conditions, by improved methods of living, by swimming pools and healthy outdoor sports.

The mill family under these favorable conditions and influences is a family of the old type that this nation used to be so proud of before the dollar took the place of a man. You will find sterling qualities of head and heart in the cotton mill family. This family, living under improved sanitary conditions and surrounded by wholesome and elevating influences, possess a marvelous degree of nerve vitality and stored-up energy.

I speak of this because while I believe that the South is a glorious section of this country, and that cotton manufacturing is the important industry of the South, I at the same time believe that the development and wise direction of this tremendous energy in the cotton mill population is of the supremest importance. This will prove,

first, a blessing to them; second, to us, and, third, to the South.

I shall be untrue to my sentiments and to what I believe is justly due her if I do not pause here to say a word of praise of the Southern cotton mill girl. Born of hardy parents, reared in a well regulated home, taught by precept and example a systematic way of living, working in the daytime and sleeping in the night—instead of sleeping in the daytime and reveling in the night—her physical being developed by light and skillful work, she needs neither the rag bag nor the paint box to surpass in beauty the dissipated society girl; and when she leaves the loom to adorn a home she carries with her loyalty to truth and loyalty to husband; carries with her kindness of heart and obedience to husband, and with fortitude and patience she takes up the arduous duties of a home, and needs no Roosevelt to preach to her the sins of race suicide. Beautiful and virtuous, yet knowing how to work and possessing strong nerve vitality—the Southern mill girl is the Roman maid brought over into the twentieth century.

The criticism has been offered that all the progress made in "welfare work" has been prompted from a purely selfish motive. This is an unfounded as well as an unfair criticism. A high sense of duty has been the controlling motive. Those in authority, realizing the great responsibility of their positions, and knowing that they occupy a position which places largely within their power the shaping of the destiny of thousands of girls and young men—these men have determined that yarn and cloth shall not be made with a socrifice of morality and human life; but that along with the yarn and cloth shall be developed manhood and womanhood of no mean type.

I know, as well as any one else, that from the great progress made in "welfare work" there have accrued great advantages to the mill management; but the first and great advantages have been to the toiling masses, and only indirectly to us. That this motive has been selfish instead of philanthropic I most emphatically deny.

The presidents of this great manufacturing industry, realizing their responsibility, determined to create an environment conducive to the healthiest body, mind and soul of their employes. Thev have simply subscribed to the belief that the keystone of life's arch is helpfulness.

Cotton mill industry and labor is becoming more and more dignified. If the South is going to be great, her cotton industry is going to be still greater. Our possibilities for doing good to others and to ourselves are practically unlimited.

Having tried to point out the transformed conditions in cotton mill life from an earlier period, and believing in the greatness of our work—I shall close what has been a very pleasant task to me in tracing the progress made in "welfare work."

Mr. Davis showed a comprehensive grasp of the subject, speaking from personal knowledge, as he is at present carrying on at his mill a highly developed system of welfare work.

The next paper was by George F. Brietz, superintendent of the Coosa River Mill, Bon Air, Ala. In the absence of Mr. Briez the paper was read by T. F. Cuddy, superintendent of the Harris Mfg. Co., Rock Hill, S. C.

A paper on carding was read by L. N. Thompson of the Sykes Card Clothing Co. of Charlotte.

At the afternoon session a valuable paper was read by S. B. Rhea, master mechanic of the Louise Mills, of Charlotte.

Power Plant Costs.

BY S. B. RHEA.

It is my intention in reading this paper to give the cost of installation of power plants used in driving cotton mills both with electricity and steam, and will undertake to give it as correctly as it can be obtained and make an effort to do justice to all parties as far as facts will let me. And, again, I have another reason for presenting this paper before this excellent body, in that a contention has been made in a previous meeting that it takes sixty-five dollars ($65) per horse power to build a modern steam plant and eleven dollars and fifty cents ($11.50) per horse power to equip a mill electrically.

In this paper I will show, or endeavor to show, steam plants now under construction where it will be far less than the amount mentioned, and the electric drive about the same.

It will be necessary to consider a steam plant of a definite size and at the same time an electric transmission of the same size in order to get a comparison.

Let us consider a mill of 55,000 spindles, and go into the detail cost of all the apparatus in each drive. On the steam side, including engine 32 by 64 by 60 inch cross compound condensing complete, foundation condenser, all necessary pumps, all piping, boilers, stack or chimney or induced draft, engine room building and boiler room building, also drive to main line shaft, and add to this the installation of the same.

And also on the electric side, to consider all cost, price of motors, switch boards and all material and also the cost of installation.

STEAM PLANT—COST OF INSTALLATION.

I have here a proposition in the way of a letter from a well-known engine builder (and will say this very same company had in Spartanburg County, this State, ten engines in a good sized plant twelve years ago), who will build and erect on purchaser foundation, together with modern water tube boilers, all pumps, including condenser, and all necessary boiler feed pumps, this equipment to consist of 32 by 64 by 60 inch cross compound condensing engine with a I. S. P. of 155 or 160 lbs., running 80 or 85 r. p. m., and jet condenser, all connected and ready to run, for $85,000; and the rated power of the machine is 2500 h. p., which will come at the rate of $34 per horse power.

I have here "blue prints" (exhibit blue prints), showing foundation of an engine of this size—32 by 64 by 60 inch, running at 80 or 85 r. p. m., and also will add that there are several engines of this size running on this very same foundation's plane in the Carolinas.

This foundation, as it is shown, stands 13 feet above the level of the ground, one foot of concrete footing covering 42 by 46 feet.

I had an estimate made by a contractor of this kind of work and who does a $100,000 business annually. I have a letter from him giving his estimate at $3,165.50, or at the rate of $1.26 per horse power; this includes foundation for engine and condenser. In this lay-out, I will estimate an exhaust fan. I have the information from a manufacturer, where a fan of ample size for boilers of this capacity would cost $1,260, including automatic regulating valve and installation, etc., at the rate of fifty cents per horse power.

It seems to be a question among operating engineers which they prefer, high chimney or exhaust fan and economizers, but there seems to be no question among the mechanical engineers as to the installation of a fan.

It is claimed by engineers that a good mechanical draft will give better and smokeless combustion from any kind of fuel or cut the cost of fuel by utilizing a cheaper grade of coal. With plenty of draft under control, it is possible to burn soft or hard coal slack or the cheaper Western coal.

With proper furnaces and mechanical drafts, this may be done with high boiler efficiency and with little smoke.

One horizontal smoke connection 90 feet long 9 by 9 feet at large end uptakes 18 by 48 with dampers all erected would cost $1,350.

Smoke stack 45 feet high, 7 feet diameter, of 3/16 steel, with suitable band guys, etc., erected, would cost $525, making a total of $1,875, or seventy-one cents per horse power.

To build a chemney 175 feet high and 9 feet inside would cost $7,500, or $3 per horse power.

Engine room building 44 by 70 feet, 13-foot basement and 22-foot story in engine room, cost including gravel roof, trusses and boiler room 44 by 115 feet, everything complete, $2,465, or in round numbers $1 per horse power.

Among other things plenty of cool water is necessary for condensing purposes. There are two ways of getting this: One way is by having a large body of water and handling it every three or four days, giving it ample time to cool.

And the other way is by cooling the tower and using a small amount of water, just taking the minimum of water used for fire protection.

On inquiring into the cost of a reservoir, I find that it is always fixed by surroundings. I find in most places they have natural conditions and the cost runs down as low as twenty-five cents per horse power.

The writer knows one of the large mills in South Carolina, that is situated in one of the leading towns, where the reservoir cost was as low as ten cents per horse power, and others that are situated on water courses that cost merely nothing.

In using the cooling tower, one would want for a 32 by 64 by 60 inch say 37,500 pounds of steam 26 inch vacuum, 75° atmospheric temperature and 70° relative humidity; the tower erected complete will cost $9,000. Such a tower has four 120-inch fans, each pair of fans requiring 24 h. p., or a total of 48 h. p., and this horse power at 12 cents per horse power would increase the operating expense twenty-three cents per horse power.

Although the horse power figured in this would not be so high from the fact that during the winter months it would not require all the fans to be driven, but allowed to go in for other losses and keeping in view that it is the intention to build a steam plant of the best type for business.

In comparing the tower with the reservoir, I would prefer a reservoir up to this cost of tower. If it was found that the water supply and natural conditions were such that you could not build a reservoir, I would advise installing a cooling tower at the cost of $3.60 per horse power.

I have two kinds of drive that I will consider—the American or single rope and the Dodge system. Either system can be put in for less than $1 per horse power.

Twenty-five hundred horse power drive with engine running at the speed mentioned before, 50 feet between centers, will take 4,600 feet of 1 3/4 inch transmission rope and this with three split rope shave pulley, 18 U grooves each and winder sheave, tension sheave three four-wheel tension carriage track hanger supports, and everything complete, for $2,270, which, as said before, can be done for $1 per horse power.

And the other system of rope drive will be a longer distance between centers and will take 10,000 feet of 1 3/4 inch best quality of "American Manilla Rope" laid down in the Carolinas would cost $1,225, and this with three driven pulley for main line of shafting would bring the cost to $2,210.

ECONOMIZERS.

Economizers are not necessary. I mean that in building a steam plant it can be built without the economizer and they are put in only for the simple reason—to reduce coal consumption and possibly increase boiler capacity also. That the amount of money invested in an economizer is paid back by the economy of operating the steam plant. The builders claim and guarantee, I think, a saving of 10 to 20 per cent. by their installation. And if it were for comparison against any other prime mover, the amount taken to complete the installation should not be accounted for, unless the saving was taken in consideration.

But, at any rate, we will consider the cost anyway. Economizers with 700 pipes would cost approximately $9,800, or $3.92 per horse power.

I have another proposition in the way of a bid from one of the largest engine builders in the country who have their engine in the largest power station in the Carolinas.

For a 2500 h. p. engine or approximately 32 by 64 by 60 inch at 85 r. p. m. in 150 to 165 I. S. P., 26 inch vacuum and for rope drive. For an engine of this type and size, with proper rope wheel and jet condenser and all piping between condenser head and hot well and the engine delivered and erected on purchaser's foundation at competitive point in the Carolinas, the cost would be $13.67 per horse power. And that the power piping for condensing would cost $3.70 and the steam pipe to boiler room could be installed for ninety cents per horse power. And the fire tube boiler can be bought and installed for $6.82 per horse power.

	Cost per h. p.
We have engine and condenser	$13.67
Piping, etc.	3.70
Fire tube boilers	5.00
Installing fire tube boilers	1.82
Directed fan and stack	1.21
Foundation	1.26
Boiler pumps	.25
Economizer	3.92
Drive	1.00
Pipe in to boiler	.90
Pipe covering	.50
	$33.23

PROPOSITION NO. 3.

We could change this proposition and take out the exhaust, fan and iron stack, which would reduce the cost 50 cents per horse power, and put in chimney 9 inches inside diameter 175 feet high at a cost of $7,500.

	Per h. p.
Engine contract	$13.67
Piping	3.70
Fire tube boilers	5.00
Installing fire tube boilers	1.82
Horizontal smoke connection	.75
Foundation	1.26
Economizer	3.92
Chimney 175 ft. high and 9 ft. diameter	3.00
Reservoir	3.60
Rope drive	1.00
Pipe covering	.50
	$38.22

I know of a steam plant in North Carolina that was built five or six years ago and they got a price like this for 24 by 48 inch single engine and this is the contract for the high side and was built and installed for the amount below:

Machinery contract	$ 9,750.00
Extras	97.50
Foundation stone	85.00
Brick laid in	450.00
Boiler casing complete	400.00
Engine and boiler building	1,500.00
Stack complete	950.00
Water supply complete	800.00
	$14,032.50
Would say to build a plant like this at present would cost	2,000.00
Total	$16,032.50

This machine is a 500 h. p. engine and the layout cost $16,032.50, or $32.06 per horse power. This is for a non condensing engine and the mill company now holds a contract with an engine builder to put on low side $8,900 to change it to cross compound condensing, and the water supply and foundation would not exceed $3,000. Now this engine after being compounded would be capable of developing 800 h. p. and the plant would cost $27,932.50, or $34.91 per horse power. I can say this plant could be built for $35 per horse power.

We can plainly see what has been done, but I have something here that is somewhat later that will be done this year.

I know of a mill under construction now, and in one of the best little cities in the state, where they have a full contract for the whole plant, including all but building, for $30,000, or $30 per horse power. This mill has stack and reservoir, and with building would cost, say $32.50 per horse power.

I have information at hand on steam plant cross compound condensing that cost $21,000 and operates a mill with 23,000 spindles, and develops 700 h. p., or about 30 spindles per horse power.

GROUP MOTOR DRIVE.

For motor drive on basis of 2,300 volts, 60 cycle, 3 phase inductive motors for ceiling suspension for 55,000 or 60,000 spindles mill.

Motors divided as follows:

10	150 h. p.
8	100 h. p.
5	50 h. p.

Gives a total of 2,550 horse power with one incoming line panel, three feeder panels, and 23 oil switches for wall mountings, one for each high voltage motion, the total cost of this apparatus delivered in Charlotte figures up $28,687, or $11.25 per horse power. These figures do not include installation or wiring and possibly it can be done for $2.60 per horse power.

Figuring this in on that basis, gives you $6.635 for the wiring, making a total installation cost of $35,322.

INDIVIDUAL DRIVE.

In the individual drive we would have 220 spinning frames, 250 spindles to the frame, which would give the mill 55,000 spindles, and you find the average spinning frame takes five horse power motor, this will give us 1100 h. p. or 821 k. w.

All these motors are small. They cannot, of course, operate on high voltage and we are compelled to figure on 220 or 110 volt machines.

This 1100 h. p. will require 821 k. w. in for stepping it down from 2300 to low voltage for small motor. Therefore, we have 220 five-horse power motors with 821 k. w. transformer for same, and with a small switch mounted on slab for starting purposes, will cost f. o. b. cars in Charlotte $18,535 or $16.85.

In addition to this, we have left 1455 h. p. for pickers and card room and weaving. Figuring this end of the mill then at the price as covered by case of group drive at $11.25 per horse power, you have this $16,367.75.

It is claimed by electrical engineers that if the individual were installed it should only be in the picker room.

I am sorry I have no data on this, but, at any rate, would not change the efficiency to any great extent, as only about 5 per cent. of power used in cotton mills go in the picker room.

And together with the spinning room cost, you have together $34,902.75, wire and installation $7,650, or $16.70 per horse power, would be the cost of the individual drive therefor.

Going back to the engine cost, we have

PROPOSITION NO. 1.—STEAM DRIVE.

	Cost per h. p.
32 by 64 by 60 inch engine, water tube boilers, with all necessary steam piping, jet condenser, placed on purchaser's foundation and ready to run	$34.00
Foundation concrete	1.26
Engine and boiler room building	1.00
Cooling tower or reservoir	3.60
Exhaust fan	.50
Horizontal smoke connection and stack	.75
Rope drive	1.00
Pipe covering	.50
	$42.69

S. B. RHEA.

To make a comparison between steam power and power transmitted by electricity would put the extra amount of shafting in mill used in steam drive to the credit of the electric drive.

Slashing, heating, fire protection and cost of the reservoir would be against the electric drive.

Want boiler house 24 by 44—22 feet story, cost $495, or 20 cents per horse power.

Two—150 h. p. boiler C. $6.82 installed $2.046, or 82 cents per horse power.

Smoke stack and connection $350, or 14 cents per horse power.

Reservoir 60 by 100 by 10 feet, holding 4,500 gallons of water, minimum supply for fire protection of mill this size, would cost $744, or 26 cents per horse power.

The last proposition that we have to present:

For 2500 h. p. at 150 boiler pressure condensing service this company suggests a 30 inch by 30 by 60 at 90 r. p. m. with 18 foot wheel to operate this engine take about 1500 h. p. in boilers and foundation will contain 305 yards.

Engine estimated at (Erected on purchaser's foundation.)	$31,000.00
Boilers at	15,000.00
Foundation	1,800.00
Auxiliaries and piping	7,200.00
Total	$55,000.00

	Cost per h. p.
Would come at	$22.00
Approximately, reservoir	3.60
Approximately, building	1.00
Approximately, horizontal smoke connection and dampers	.75
Approximately, chimney	3.60
Rope drive	1.00
Pipe covering	.50
	$31.45

The regulation of this engine 1 1/2 per cent. or a little better. They claim steam consumption 13 lbs. to the indicated horse power.

In regard to speed regulation, is not approached by any other prime mover is claimed by the builder.

We have a saving in shafting approximately on the electric drive:

Group drive (or $1 per horse power.)	$2,134.40
Individual drive	4,043.40
Belting	5,796.00
Total	$0,839.40

Would be equal to $3.92 per horse power.

Proposition No. 1, we have steam plant installation at $42.10 per horse power.

Proposition No. 2, we have steam plant installation at $31.83 per horse power.

Proposition No. 3, we have steam plant installation at $38.32 per horse power.

Proposition No. 4, we have steam plant installation at $31.95 per horse power.

Motor drive installation:

Group drive, $13.85 per horse power.

Individual drive, $16.70 per horse power.

Group drive shafting would save in cost $1 per horse power. $13.85 — $1.00 = $12.85 per horse power.

Individual drive would save in cost of shafting and belting $16.70 h. p. — $3.25 h. p. = $13.55 per horse power.

Electric drive save in floor space sixty-two cents per horse power:

Group drive	$12.85—$0.62	$12.23
Individual drive	$13.55—$0.62	$12.93

Electric drive save in labor fifty cents per horse power:

Group drive	$12.33—$0.50	$11.73
Individual drive	$12.93—$0.50	$12.45

Fire protection reservoir, boiler room and boilers, stack for same, and all cost in the installation

should be added to the electric horse power costs.

Fire protection reservoir cost 26 cents per horse power:

Group drive $11.73 plus 26 cents equals $11.99 per horse power.

Individual drive $12.92 plus 26 cents equals $13.19 per horse power.

Boiler room $550, 20 cents per horse power.

Boilers 300 h. p. at $6.82 per horse power $2,046 or $0.82 horse power.

Iron smoke stack 70 feet high $350 or 14 cents. .20 plus .82 plus .14 equals $1.16.

We have now:

Group drive $11.99 plus $1.16 equals $13.65 per horse power.

Individual drive $13.19 plus $1.16 equals $14.35 per horse power.

OPERATION. STEAM PROPOSITION.

A horse power per year in coal can be gotten or $13.50, and it at this time being made for far less than this in some of our South Carolina cities.

Coal	$13.50
Interest and depreciation	3.50
Oil and packing	.35
	$17.35

ELECTRIC LAY-OUT CAN BE MADE FOR THIS:

	Per h. p.
Current	$25.00
Heat, fire protection and slashing	2.90
Interest and depreciation	1.20
	$28.10

The writer admits that either one of these plants would cost more even if I have given the exact figures, for the plant will have to have three or four service pumps and possibly air compressor, humidifier pumps, etc.

And the operating has to be fixed in each drive, the difference being accounted for only, and to operate either of these drives, the labor cost is supposed to be the same.

So the above figures are only a basis and each drive is expected to cost the same when operated.

No paper read at this session appears to have excited the attention of the superintendents more than this one and at its conclusion a lively discussion arose over the facts brought out by Mr. Rhea. On the motion of A. S. Winslow, superintendent of the Clinton (S. C.) Cotton Mill, it was voted to have Mr. Rhea's paper printed in book form and mailed to each superintendent. This brought forth a protest from the Southern Power Co.'s representative, who was at the meeting, and Mr. Winslow said he was willing to have both sides of the power question printed in the same book for comparison and study.

The evening session opened with the following paper read by A. S. Winslow, superintendent of the Clinton (S. C.) Cotton Mills:

Benefits and Opportunities in Mill Life.

BY A. S. Winslow.

In commenting upon our recent paper on the "Care of the Operatives' Health," a Western journal plays upon the threadbare note of child labor in the cotton mills of South Carolina, and waxes sarcastic upon the general subject of the employment of children, the loss of child play life, inferior surroundings, and similar erroneous notions.

In order to discuss this question intelligently, one must understand the situation locally. It is unfair to the mill men of the South to condemn unheard, or, what is almost as bad, to condemn by drawing conclusions based upon conditions in far off sections of the country.

To begin with, child labor so-called, never meant labor in the sense in which adult labor is understood. The children employed in the mills in other days, ranging perhaps from seven to nine years of age, served as helpers to older persons, usually members of their own families. In due time these little helpers became in a business sense a nuisance and the manufacturer himself lent material support in the direction and passage of restrictive child labor enactment. It was a glad day when children were barred from the mills, that is, a glad day for the manufacturers, though it must be confessed that it was a sad day in many lowly homes. To understand just what is meant by this, one must have personal knowledge of what a lowly home in the South is like, and what it means to have its earnings reduced in whole or in part.

When writers talk about children and child play life in connection with mill life in South Carolina, it is well to explain that no person under the age of twelve is ever employed, save in exceptional cases, such as lending support to a widowed mother, or something akin to it. It is probably true that the average age of young people employed is about fourteen years, which means as contrasted with the North a boy of sixteen and a girl who has already crossed the mystic line that separates the child and the woman. To gain an idea of what the mill stands for to the poor whites of the South one must go to the mountains and the sand lots and study the conditions surrounding all that relates to child and adult life and living. If the writers who are able to solve problems with a toss of the pen a thousand miles away would only take the trouble to investigate they would quickly discover that the children of the wilds are taught sanitary and health measures for the first time in their lives in the mill village, and furthermore they do not know what real child play life is like until they have parted with their mountain shyness, and been taught to play by the children of the mill village.

Now as to this matter of the health of the operatives, they come to us pale, sallow, anaemic, the actual and direct result of poor food and improper living back in what Dr. Stiles calls "the one horse tenant farm." In the matter of medical attention they also suffer greatly. The right sort

of medical attention is an impossibility. The doctor lives a long way off, and when he comes the patient must of necessity be satisfied with whatever remedies the medical man may happen to have with him. When these people enter the mill village they find things vastly different, they find at the outset good wholesome food improved methods of sanitation, physicians near at hand, drug supplies in the general stores, and in the larger mill places resident physicians and pretentious drug stores.

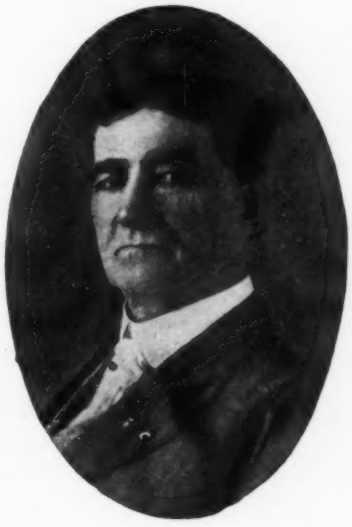
Contrary to the generally accepted opinion, the mill does not breed the diseases from which the operatives suffer most. As a matter of fact they bring their diseases with them, as has been certified to by competent medical authority. The improvement in their health is noticeable soon after their arrival in the mill village, and the reason is not hard to find. The mill is a healthy place of employment, and good food, and regular habits of living work wonders in their physical appearance. The unprejudiced observer is quick to notice this, and does not fail to give credit where credit is due. To realize what the mill means in their lives one must see them on their arrival and watch the change that follows as they are brought under the influence of the spiritual, educative and reformatory agencies, fostered and encouraged in the mill village by the mill men themselves.

No man at all familiar with the subject will deny that the mill men are interested in the spiritual and moral welfare of the operatives. The facts are all the other way. The churches and chapels already in existence, or planned for, the aid extended to clergymen, evangelists and district workers, the mill men actually and actively engaged in church and Sunday school work throws a new light on this theme. Corporations are supposed to be minus a soul, but this is not true of all corporations. There are mill men who are genuinely interested in the welfare of their operatives. By this it is not to be inferred that cotton mills are designed to be spiritual reformatories or philanthropic institutions. On the contrary the mill is run primarily as a business enterprise. But it is dawning upon the minds of the mill men that the agencies referred to contribute to the making of bright, healthy, and contented operatives.

And as operatives of this class are superior to dull, unhealthy and discontented operatives there is likely to be a greater giving, a wider extension of the helping hand in the future than even in the present, commendable though the latter be. The fact is, the life at the mill is a big improvement on the old life. The operatives never begin to live in the true sense, until they become wage earners. With all its claimed faults the cotton mill stands today the greatest benefactor, the mightiest single civilizing and uplifting agency in the life of the cotton mill operatives of the South that this class has ever known.

A textile journal intimates that information of what we are doing should be withheld from the public for this reason, that it serves as ammunition for the labor agitator. It seems to us that this argument is unsound. The agitator has waxed fat on this way of doing things, our silence has been misinterpreted and misunderstood without meaning to do so, we have played into their hands. It is time to change mill tactics in this respect at least. Instead of allowing the public to be misled, we need to stand up squarely in our own defence. By doing so we spike the guns of the labor agitator. A compaign of education will reveal that the cotton mill is not as bad as it has been painted. We shall stand higher in the estimation of the public by taking a clean manly stand, and letting the truth be known, and what is equally to our advantage, we shall deprive the agitator of his opportunity to achieve any further notoriety at the expense of the mill men of the South.

As touching business opportunities in the mill life, let us make a comparison between earnings on the farm, and in the mill. Take a tenant farmer with three children to help him, if he makes eight bales of cotton and raises a hundred bushels



A. S. WINSLOW.

of corn (which is averaging well), at 10 cents for his cotton per pound and 75 cents per bushel for his corn, he receives $475 for his year's work. If the landlord furnished land, stock and tools, as is likely, he gets one-half for his share, leaving to the farmer and his family $237.50 as their income for the twelve months. Now let the farmer take his family to the mill. He receives say, 90 cents per day for 312 working days, or $280.80. The children all over twelve years of age work say 300 days, at an average of 75 cents each per day, or $675, making the total income of the family, for the year $955.80. On the farm they eke out a bare living. Luxuries and special advantages are unknown. There is no money until the crops are sold. When the bills are paid there isn't a dollar left. It isn't like that at the mill. They receive their wages at the mill every two weeks, having good food and plenty of it, enjoy comforts unknown on the farm, possess advantages impossible in the old life, and are able to lay up something for a rainy day besides. Is it to be wondered at that people leave the farm for the mill? In mak-

ing the change they have nothing to lose and everything to gain, and so well is this coming to be understood that no amount of talk from "mud rakers" or labor organizations can keep them away.

Why should labor in the cotton mills be looked upon with disfavor? It certainly is clean, honorable employment. Though classed as poor whites, the operatives are native, and to the manor born. In the mill village they are actuated by the same principles, governed by the same motives, cherish the tradition common to all in South Carolina. They come of revolutionary stock. Their fathers fought in the war between the States. They are the children of men who sacrificed their lives, their all, for the Southern cause. Misfortune, inability to make a living elsewhere brought them to the cotton mill. Is there any good reason why they should not labor, and hold their heads just as high while striving to better their condition? The time is not yet, and we pray God it may never be, when character, and nobility of purpose is measured in dollars and cents. The operatives should be judged on their merits. It is devotion to honor, patriotism, and the practice of the virtues that make a people great. No insinuations or reflections need be cast upon workers of this stamp.

The elevation of the operatives along religious, moral and educational lines, will be found of manifest advantage. The higher the operatives rate in intelligence, the higher the quality of goods produced. It is the intelligence that governs and directs the machine, and not the machine itself that stamps character upon the goods manufactured.

A closing word: The mill offers a chance to climb the ladder of success, not to be despised: any young man of good character, bright, painstaking, and the possessor of ordinary intelligence can master the business of manufacturing cotton cloth in ten years' time. The man who understands his business in the mill is always in demand. The pay of a good overseer is from $1,000 to $1,500 per year, while a good superintendent receives from $2,000 to $6,000 per annum. They make a better showing in a financial sense than those who have spent years in training in college halls, graduating in debt and struggling for years on much smaller incomes while trying to gain a footing in the world. The mill man is paid while receiving his education, and graduates into a higher salaried position.

It is plain, gentlemen, that there is another side to the cotton mill question, and for one, we believe that we elevate the mill, and honor ourselves at the same time by making this side known to the world.

This was considered one of the strongest papers yet read on the subject and a striking refutation of the unwarranted attacks aimed at Southern mills and villages.

The last paper read was on the subject of dyeing, which is a department seldom touched upon in the meetings of this association. As the author preferred to keep the paper anonymous, his name cannot be given, although he is said to be from Charlotte, N. C. The paper was a very good one and covered many points of interest to the men who are interested in that branch of the textile industry.

The meeting was then swung into a business session and the matter of attaching a salary to the secretary's office was discussed. It was decided to carry the question over to the next annual meeting.

After the disposal of a few other minor matters there was a spirited discussion over the next meeting place. David Clark, editor of the Textile Manufacturer, and treasurer of the association, on behalf of Charlotte, extended an invitation to the association to hold the next meeting in that city, since it had been organized there. Augusta, Ga., was finally selected, the date being July 2. At the suggestion of W. P. Hamrick, superintendent of the Olympia Cotton Mills, Columbia, S. C., the vote was made unanimous. Augusta is one of the greatest cotton markets in the South. Its railroad facilities are excellent and will attract a large number of Georgia members of the association. It was agreed that the same program committee should serve for the Augusta meeting.

A delightful smoker followed the adjournment, the program including a few very fine vaudeville acts rendered by professionals.

A vote of thanks was unanimously extended by the association to the city of Columbia, and the press. The members then took their departure, treasuring in their minds the memories of a royal good time.

The list of officers for 1909-10 were as follows:

President, C. F. McCall, Greenville, S. C.; First Vice-President, W. P. Hamrick, Columbia, S. C.; Second Vice-President, J. H. Bagwell, Charlotte, N. C.; Third Vice-President, W. J. McDonald, Monroe, Ga.; Fourth Vice-President, V. B. Bogan, Spartanburg, S. C.; Secretary, E. E. Bowen, Rockingham, N. C.; Assistant Secretary, G. S. Escott, Charlotte, N. C.; Treasurer, David Clark, Charlotte, N. C.

BOARD OF GOVENORS.

T. H. McIntyre, Chairman, Gastonia, N. C.; H. H. Boyd, Charlotte, N. C.; A. M. Hamilton, Spartanburg, S. C.; Z. H. Mangum, Gibsonville, N. C.; J. M. Davis, Newberry, S. C.; N. T. Brown, Raleigh, N. C.; W. W. Becknell, Florence, Ala.; M. G. Stone, Spartanburg, S. C.; T. F. Cuddy, Clio, S. C.; J. S. Osteen, Greenville, S. C.; J. S. Drake, Lancaster, S. C.; B. J. Dobbins, Caroleen, N. C.

LIST OF THOSE PRESENT:

W. F. Davis, overseer carding Brandon Mill, Greenville.
J. A. Hinson, overseer carding, Lancaster.
R. L. O'Pry, overseer spinning Hermitage Mill, Camden.
J. D. Galloway, overseer weaving, Columbia.
A. H. Goodman, overseer carding Richland Mill, Columbia.
W. W. Scarboro, overseer cloth room Mollohon Mills, Newberry.
W. D. Stillwell, overseer carding Mollohon Mill, Newberry.
E. A. B. McAlister, overseer carding Loray Mill, Gastonia, N. C.
Frank Williamson, Brown St. Onge Company, Providence, R. I.
J. S. Osteen, superintendent Brandon Mill, Greenville.
J. E. Marchant, overseer cloth room Capital City Mills, Columbia.
W. P. Hamrick, superintendent Olympia Mills, Columbia.
C. D. Boling, chief engineer Olympia Mills, Columbia.
T. R. Hazell, overseer weaving room Olympia Mills, Columbia.
J. B. Fennell, overseer weaving room Olympia Mills, Columbia.
D. F. Short, assistant weaver Olympia Mills, Columbia.
C. M. Manning, assistant weaver Granby Mills, Columbia.
W. W. Becknell, superintendent Ashcraft Mill, Florence, Ala.
W. A. Stephens, overseer of spinning Durham Cotton Mill.
J. H. Harris, superintendent, Durham, N. C.
J. W. Cates, overseer of carding Durham Cotton Mill, East Durham, N. C.
L. L. Clippard, superintendent Beaver Dam Mill, Edgefield.
E. H. Clippard, superintendent Whitney Manufacturing Company, Spartanburg.
W. H. Monte, president Southern Spindle & Flyer Company, Charlotte, N. C.
S. B. Rhea, chief engineer Louise Mill, Charlotte, N. C.
C. P. Deal, chief engineer Mecklenburg Mill, Charlotte, N. C.
John W. Fox, Westinghouse Company, Charlotte, N. C.
Albert Mill, electrical engineer Southern Power Company.
C. P. Harmon, overseer carding Granby Mill, Columbia.
J. R. Murphy, superintendent Marlboro Mills, McColl.
M. O. Alexander, superintendent Woodside Mills, Greenville.
J. C. Lewis, carder and spinner, Columbia.
F. P. Kinnear.
A. C. Boling, chief engineer Richland Mills, Columbia.
S. W. Mimms, superintendent Richland Mills, Columbia.
C. R. Riddle, overseer of weaving Granby Mills, Columbia.
J. T. Moreland, warp compounder, Spartanburg.
J. S. Thomas, superintendent Pacolet Mill, Pacolet.
J. W. Wright, superintendent Calumet Mill, Liberty.
C. A. Buchanan, superintendent, Darlington.
W. W. Chandler, overseer carding Woodside Mill, Greenville.
T. T. Goings, overseer spinning Arkwright Mills, Spartanburg.
L. O. Bishop, overseer weaving Arkwright Mill, Spartanburg.
J. M. Gamewell, superintendent Arkwright Mill, Spartanburg.
J. S. Drake, overseer spinning, Lancaster.
A. S. Winslow, superintendent Clinton (S. C.) Cotton Mills.
J. F. Carter, overseer weaving Woodside Mill, Greenville.
B. N. Knight, assistant carder Capital City Mills, Columbia.
C. H. Moore, night superintendent Dickson Mill, Laurinburg.
W. D. George, chief engineer, Buffalo.
W. F. Daggett, superintendent Buffalo Mills, Buffalo.
J. E. Thompson, overseer weaving, Ninety-Six.
N. T. Brown, superintendent Pilot Mills, Raleigh, N. C.
G. W. Miller, overseer weaving Palmetto Mill, Columbia.
L. H. Cole, overseer spinning Dickson Mill, Laurinburg.
Frank G. North, Barber Colman Company, Atlanta, Ga.
J. H. Spencer, Barber Colman Company, Greenville.
Fred B. Vogelie, New Brunswick Chemical Company, Greenville.
Hugo Koblentz, New Brunswick Chemical Company, Greenville.
R. S. Scarboro, overseer spinning Granby Mills, Columbia.
D. J. Bolton, superintendent Marlboro Mill, No. 3, McColl.
C. B. Brannon, overseer weaving Carolina Mills, Greenville.
J. B. Covington, superintendent Albion and Mt. Holly Mills, Mt. Holly, N. C.
B. S. Cottrell, Southern representative G. M. Parks Co., Charlotte, N. C.
C. Randolph, representative Bennett Wool & Cotton Reporter, Boston, Mass.
Marshall Dilling, superintendent Avon Mill, Gastonia, N. C.
T. M. McIntyre, superintendent Loray Mill, Gastonia, N. C.
O. P. Mills, Jr., Keever Starch Co., Greenville.
H. G. Smith, superintendent Mills Manufacturing Co., Greenville.
J. Y. Jones, overseer spinning Newberry Cotton Mills, Newberry.
J. M. Davis, superintendent Newberry Cotton Mills, Newberry.
David Clark, editor Textile Manufacturer, Charlotte, N. C.
Claude Cole, representative Textile Manufacturer, Charlotte, N. C.
G. S. Escott, editor Mill News, Charlotte, N. C.
G. W. Turnipseed, superintendent, Enoree.
C. W. Price, superintendent, Orangeburg.
T. B. Wallace, superintendent Watts Mill, Laurens.
M. G. Stone, general superintendent Pacolet Manufacturing Co., Pacolet.
M. P. DuBose, superintendent Palmetto Mill, Columbia.
W. C. Cobb, superintendent Ware Shoals.
C. H. Hailey, overseer carding and spinning, Carhart Mill, Rock Hill.
R. P. Starnes, assistant superintendent Manchester Mill, Rock Hill.
J. H. Sadler, master mechanic Manchester Mill, Rock Hill.
W. B. Todd, overseer cloth room, Buffalo.
J. O. Edwards, overseer carding Capital City Mills, Columbia.
E. E. Brown, overseer weaving Great Falls Manufacturing Co.
G. F. McCall, overseer spinning Brandan Mill, Greenville.
W. B. Hathaway, Universal Winding Co., Charlotte, N. C.
J. W. Eddy, Jr., Charlotte Supply Co., Charlotte, N. C.
W. M. Fallor, Leather Belting Co., Charlotte, N. C.
Bradford Mooney, Bradford Belting Co., Cincinnati, O.
W. B. Pratt, with Ashworth C. C. Co., Ashworth, N. C.
Jack C. White, overseer carding, Lancaster.
S. B. Shipp, superintendent Richland Mill, Columbia.
D. C. Lewis, overseer spinning, Columbia.
J. H. Turner, overseer carding, Piedmont.
James F. MacEnroe, assistant treasurer Ware Shoals Manufacturing Co.
John F. Bannon, superintendent Union Bleachery, Greenville.
J. N. Paradis, Textile World Record, Boston, Mass.
T. F. Cuddy, superintendent Harris Manufacturing Co., Rock Hill.
D. B. Chandler, overseer cloth room, Newberry.
J. J. Iler, Augusta Cream Sizing Co., Augusta, Ga.
G. F. Jones, designer Monaghan Mills, Greenville.
W. L. Moore, assistant weaver Capital City Mills, Columbia.
W. A. Price, overseer carding Newberry Cotton Mills, Newberry.
J. M. Cannon, superintendent, Simpsonville.
W. O. Jones, overseer weaving Capital City Mills, Columbia.
C. C. Brigman, overseer spinning Richland Mills, Columbia.
W. Moseley, overseer cloth room Olympia Mills, Columbia.
E. M. Wilson, master mechanic, Union.
Dr. E. H. T. Foster, secretary Mills Y. M. C. A., Columbia.
George B. Hurt, assistant foreman weaving room Granby Mills, Columbia.
A. B. Brannon, superintendent mills, Union.
W. T. Corne, overseer weaving room Buffalo Mills, Buffalo.
R. L. Hindman, Olympia Mills, Columbia.
A. D. Steadman, superintendent, Lockhart.
T. N. Cracter, overseer carding Clinton Mills, Clinton.
B. Clisby, assistant carder Clinton Mills, Clinton.

J. B. Wright, overseer carding, Enoree.
J. L. Davis, superintendent, Ninety-Six.
A. R. Coastee, overseer weaving, Laurens.
W. A. Price, overseer carding, Newberry.
W. H. Hardeman, overseer weaving, Newberry.
J. Y. Jones, overseer spinning, Newberry.
W. A. Wofford, overseer cloth room, Pacolet.
H. Thomas, overseer spinning, Pacolet.
T. M. Bass, overseer roller shop Olympia Mills, Columbia.
W. H. Sanders, overseer spinning Capital City Mills, Columbia.
H. Harris, representing Byrd Knotter, Durham, N. C.
metto Mills, Columbia.
T. J. Barber, overseer cloth room, Lockhart.
Fred B. Vogelie, Greenville.
D. Perry, assistant overseer spinning Capital City Mills, Columbia.
F. Mims, overseer spinning, Columbia.
D. B. Chandler, overseer cloth room, Newberry.
W. E. Redd, superintendent, Fairmont.
H. F. Moody, superintendent Victor Mill, Greer.
Homer Wood, superintendent Saxe-Gotha Mill, Lexington.
Allen Jones, treasurer Palmetto Mills Company, Columbia.
S. T. Buchanan, superintendent, Piedmont.
Andrew Buchanan, Piedmont.
J. W. Nipper, overseer spinning Palmetto Mills, Columbia.
H. McClarendon, overseer carding Palmetto Mills, Columbia.
C. R. Harmon, overseer carding Granby Mills, Columbia.
W. D. Ingle, overseer weaving Clinton Mills, Clinton.
L. Williams, superintendent Pine Creek Mills, Camden.
Geo. Witherspoon, overseer weaving, Seneca.
C. E. Baker, Capital City Mills, Columbia.
H. Turbeville, overseer cloth room Granby Mills, Columbia.
G. Wilson, Louise Mill, Charlotte, N. C.
L. W. Davis, overseer Olympia Mills, Columbia.
E. Bates, superintendent Ottaray Mills, Union.
A. M. Hamilton, superintendent Drayton Mill, Spartanburg.
W. G. Barnett, electrician Olympia and Granby Mills, Columbia.

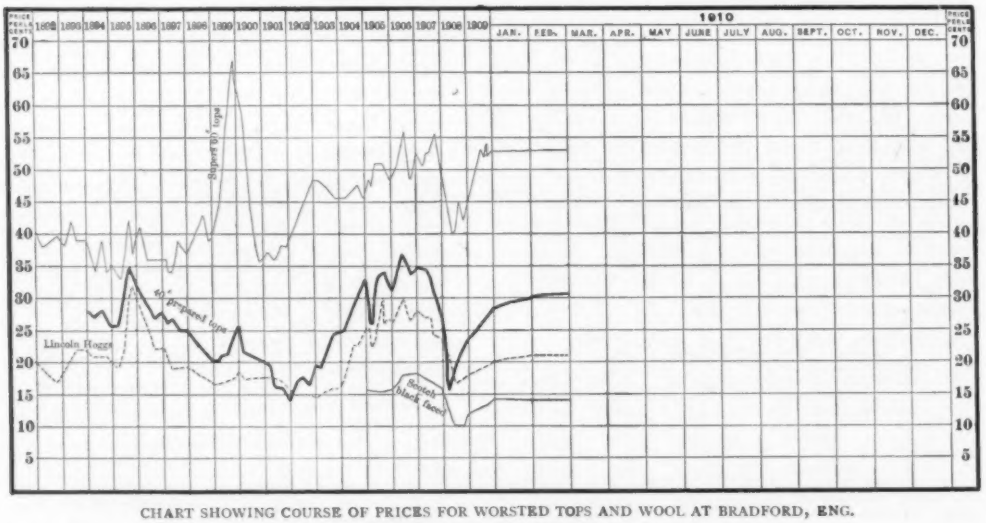


CHART SHOWING COURSE OF PRICES FOR WORSTED TOPS AND WOOL AT BRADFORD, ENG.

THE AMERICAN COTTON MANUFACTURERS' ASSOCIATION.

This association will hold its next meeting at Charlotte, N. C., on May 17. 18 and 19. Secretary Bryant is arranging an interesting program. This and the place of meeting in the center of the Southern cotton manufacturing industry, will make the occasion especially attractive, and it is expected that an unusually large number of Northern as well as Southern manufacturers will be in attendance.

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The annual meeting of this association will be held in Talbot Hall, Mechanics Building, Boston, on April 27 and 28. The exhibition of textile machinery and appliances by the Textile Exhibitors' Association will be in progress at the same time and place, making the occasion one of special interest to the trade. The program is in course of preparation and will be issued shortly before the meeting. Members who desire to present papers are invited to inform Secretary Woodbury as soon as possible in order that reservation of time may be made.

NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS.

The date for the annual convention and exhibition of the above named association has been changed from May 16-20th to May 23-27th. The change in dates has been made largely on account of the fact that the annual convention of the American Cotton Manufacturers' Association will be held in Charlotte, N. C., on the 17th, 18th and 19th of May. As some of the Southern members and many of the machinery, yarn and supply representatives are anxious to attend both conventions, it was deemed advisable to made the change as above noted.

SEASONABLE FABRICS.

DRESS GOODS.

The dress goods market continues very active, very few changes having taken place during the month. The demand for 36-inch fabrics such as all wool serge, diagonals, etc., has been one of the features of the trade. The market is short many pieces of these goods and with the increasing demand these fabrics will be scarce the entire season. Buyers who are using large quantities of

FIG. 1.

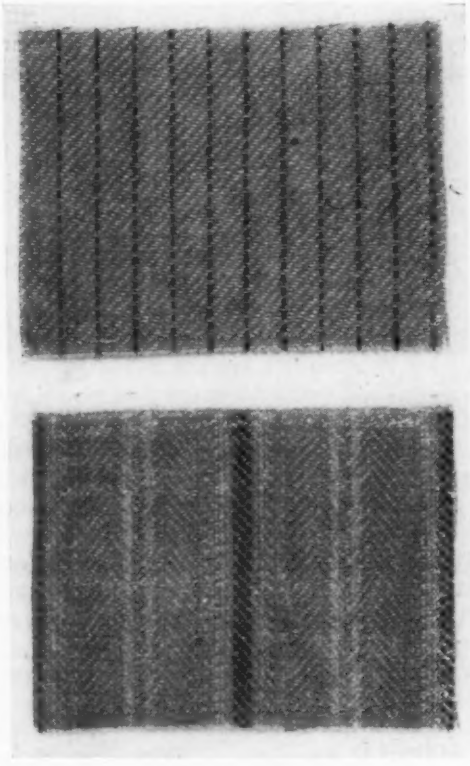


FIG. 2.

these 36-inch all-wool storm serges have had difficulty in supplying their wants, and are using a 36-inch cotton warp serge which they can handle to good advantage in the dark shades.

The trade favors light weight plain weaves, such as taffetas, poplins, repps, etc., for early deliveries. Piece dyed fancies in herring-bone and diagonal weaves are very popular in all of the spring shades. The usual spring demand for satin stripe effects is in evidence. Navies, garnets, tans and greens are very popular in qualities costing from 55 to 85 cents a yard.

The demands for cream dress goods continue to increase as the season progresses. Fine quality cream serges, panamas and fancy weaves, especially in 48 to 54-inch goods costing from 75 cents to $1.35 a yard, are short in supply. The trade is favoring cream hair line stripes, both for immediate and later shipment. Fig. 1 shows a 50-inch

FIG. 3.

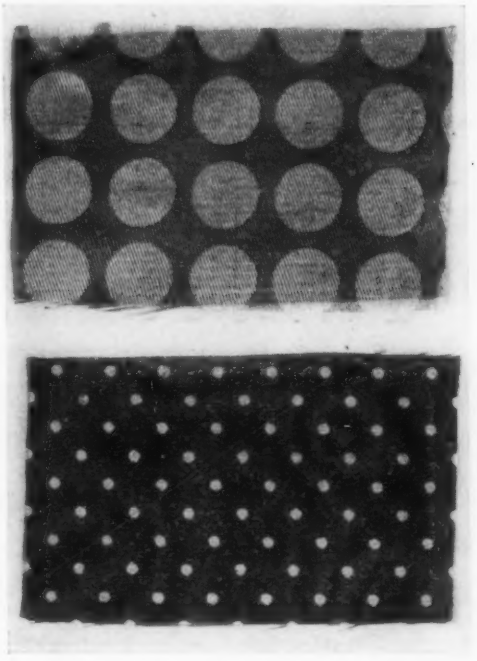


FIG. 4.

hair line stripe from the Germania Worsted Mills at $1.00 a yard. Fig. 2 shows a 54-inch fancy hair line from King & Beals at $1.12 1/2 cents a yard.

While stripe effects are the most favored weaves for the spring trade, checks are gaining, and the manufacturers predict they will finish the season very strong.

The importers and domestic selling agents

have opened their lines for the fall and winter seasons of 1910 and 1911. Slight advances are made throughout the lines, especially on plain weaves, and the manufacturers have advised the trade to supply their entire wants early as production will be limited. Storm serges, chiffons, broadcloths and piece dyed fancies are favored for the coming season.

FIG. 5.

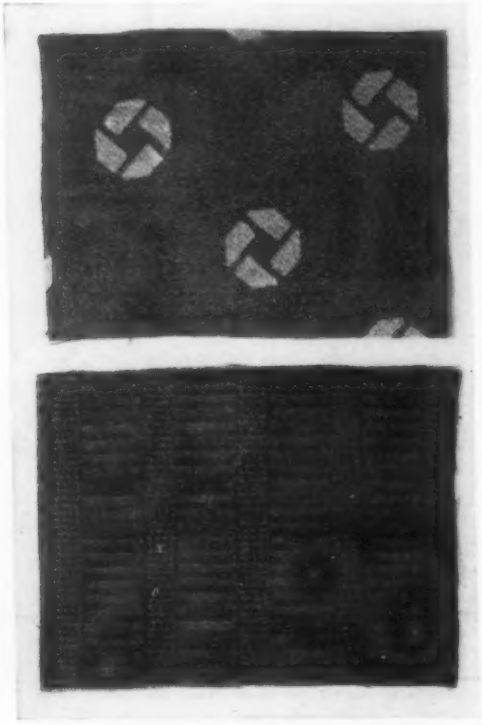


FIG. 6.

SILKS.

The silk market has been very active during the past few weeks. This is due largely to the number of silk buyers who have visited the market completing their spring purchases. While these buyers did not buy as freely as in former seasons, the business taken as a whole was very satisfactory. The buying trade, as a rule, has confined its purchases to staple spring fabrics for early shipments, leaving the novelties effects for later orders.

As the season advances foulards continue to gain favor, especially in neat staple designs of dots, rings and small figures. Fig. 3 shows a neat dot effect sold in all the spring shades, 24 inches wide at 42 1/2 cents a yard, by Arnold Constable & Co. Fig. 4 shows a 22-inch staple dot from Samuel Eiseman & Co. at 60 cents a yard. Fig. 5 shows a 40-inch cloth from Chas. Schoolhouse & Co. at 85 cents a yard.

Rough pongees and Shantung silks continue to find a ready market, especially in the natural shades. Apricot, rose pink and biscuit are favored for early shipments. Popular priced silk and cotton mixed pongee in qualities costing from 24 to 37 1/2 cents a yard are in demand in full color assortments. Several manufacturers report that they are booking orders for fall deliveries on these silk mixed pongees.

In the fancy silk market piece dyed silks in stripes and jacquard effects are favored in the new spring shades. Fig. 6 shows a neat stripe effect 20 inches wide from Pelgram & Meyer at 72 1/2 cents a yard.

Silk and cotton mixed fabrics, especially in the neat foulard patterns, continue to be in demand. These goods are being used in place of low end foulard this season with good success.

COTTONS.

Generally speaking the cotton goods market continues in the active condition that has prevailed during the season. While prices have been advanced on all grades of cotton fabrics during the past few months, the demand continues to meet the supply, especially for staple domestic cottons and sheetings. The buying trade is not placing as large orders as in former seasons, but continues to supply its wants in smaller quantities, which has helped to create the steady conditions that are prevailing on most lines.

The demands for wide sheetings and ready made sheets and pillow cases have been one of the features of the staple market. The retail buyers of these lines have been keeping their stocks down, prior to their February inventory, but are replenishing with complete assortment of sizes. While most of these buyers are not ordering the usual quantities, the general feeling exists among these buyers that the market conditions will remain firm for some time.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

PLAIN VELVETS.

BY GAUL.

The manufacture of velvet is a very old industry, having originated in India. This class of goods was introduced into Europe at the time of the early Roman emperors. In the middle ages Italy acquired a high reputation for the manufacture of velvets, Genoa, Venice, Milan and Florence being the leading centers of the trade. In 1536 the Italians established the manufacture of velvets at Lyons, France. The new industry developed rapidly and came under the Royal Ordinance of 1667. After the revocation of the edict of Nantes in 1689 the Huguenots carried the industry to Holland, establishing it at Harlem and Utrecht, whence it passed to Germany and England. At the end of the 18th century a French company imported velvets from China, but the experiment was not a success as the fabrics could not compete with the European goods.

Velvet is a fabric in which the face is covered with a mass of projecting tufts or fibers. This effect is produced by weaving loops in a ground fabric, the loops being afterwards cut to form the projecting tufts. The ground is usually woven with a simple weave, plain, twill, batavia or rib, which is not visible, being completely covered by the pile or velvet tufts. The pile is obtained by a supplementary set of threads which may be either warp or filling. Velvets are divided into two varieties: 1, Warp velvets; 2, filling velvets. In the true velvets this supplementary set of threads, which we will call the pile threads, are drawn regularly into loops and then stitched to the ground work.

Fig. 1 illustrates the velvet construction. Here the ground is a plain weave. The velvet pile is formed by the threads, 2 and 5, which, after they are cut, assume the position as shown, being held in place by the filling threads, 1 and 3. This is a warp velvet. In a filling velvet the pile would be formed by filling threads which after being cut are held in place by certain warp threads. It is consequently easy to distinguish between filling and warp velvets. The pile threads can be stitched either under one or several threads as desired. As soon as the pile threads are cut the ends untwist and form a fibrous tuft. It is easy to remove the

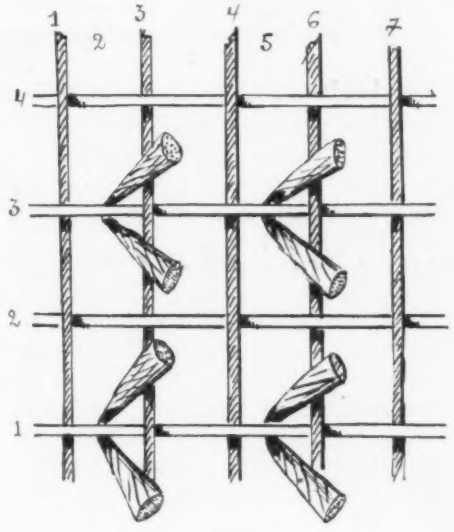


FIG. 1.

pile threads from a sample of velvet without disturbing the ground work. This enables the ground weave to be easily determined. Although it may be in some cases difficult to determine whether the fabric is a warp or a filling velvet, it should be borne in mind that the method of manufacturing differs materially. In making warp velvets the pile is cut as the weave proceeds, while in filling velvets the pile is cut by workmen after weaving. Thus the direction of the cut is crossways in warp velvets and lengthways in filling velvets.

WARP VELVETS.

As already stated, the pile on warp velvets is cut as the weaving proceeds. A small metal or wood spindle, called a wire, is inserted in the warp. This is withdrawn when the pile is stitched sufficiently to prevent damage to the loop by cutting. The wire is placed between the ground work and the pile threads at right angles to the warp like a pick of filling. The form of the wire varies according as the weaving is done by hand or power. Fig. 2 shows sections of three forms of wire. Form 1 is used for hand work. This wire is made of brass and has a groove at the top in which a special cutter is guided by the workmen. Form 2 is used for power looms.

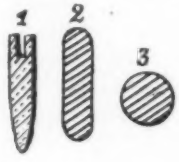


FIG. 2.

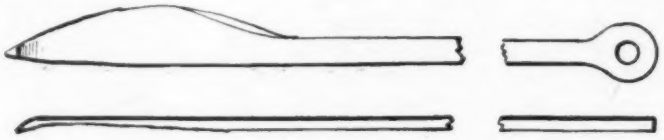


FIG. 3.

Fig. 3 shows a steel cutter. The point of the cutter is bent slightly towards the cloth so as not to damage the reed. The wire is rounded, as shown, in order to facilitate its passage across the warp. There are a number of methods of operating the wire by power, giving it a uniform movement, or a movement uniformly accelerated or retarded. I will not describe here the various systems for operating the wire. It is sufficient to know that the loom can weave two or three picks between each wire. In most of the looms the wire is operated at the right, but there are double narrow looms in which the wire can be operated from either side, enabling certain fancy effects to be produced with the jacquard head. From what has already been said it will be understood that the pile is cut by hand as it lies on the wire, while in power cutting the pile is cut by withdrawing the wire from the pile. In the latter case the pile is drawn from an upright position and inclined from left to right. Hand cutting gives a smoother face and a better pile than power cutting. Many attempts have been made to duplicate hand cutting by the power process, but the complication of parts has been an obstacle to success.

The circular wire, 3, Fig. 2, is used for the manufacture of boucle velvets in which the pile consists of loops or half circles which are obtained by withdrawing the wire without cutting the pile thread. Thus plain velvets may be divided into three classes: 1. Cut pile. 2. Boucle pile. 3. Mixed boucle and cut pile. Class 3 may include fancy velvets. To these three classes may be added a fourth, namely, the damask or jacquard velvet which is capable of indefinite variation as regards the pile. In these various velvets the height of the pile varies widely and depends on the size of the wire. The weave construction of a velvet fabric will be understood by reference to Fig. 4. A represents the pile thread in a longitudinal section of the cloth. The filling threads are indicated by the circles, 1; the wires are shown at 2. The pile warp passes under each filling thread and over the wire, the weave being one filling pick, one wire. This is simply a theoretical construction as a fabric made with only one pick between the wires cannot be recommended. The weave draft of the pile thread, A, is shown at a. The filling threads are interlaced with the ground warp, which are woven as shown at B, the weave draft for the ground being shown at b. In the weave drafts the position of the pile is indicated by the lines at the right. The completed weave drafts are shown at C and D. In these drafts the ground threads are indicated by black squares, the pile threads by shaded squares. In the draft, C, two ground threads follow each pile thread making it 2 ground and 1 pile. In the draft, D, the warp is 1 ground, 1 pile. From an examination of these illustrations we obtain the following rules:

1. For a solid plain velvet at least two harness are necessary. The ground warp woven as shown at B takes up much less than the pile warp which passes over the wire. The difference between the length of warp for the ground and for the pile varies widely and depends on the size of the wire and method of stitching the pile warp. The pile warp varies from 5 to 12 times the length of the ground warp.

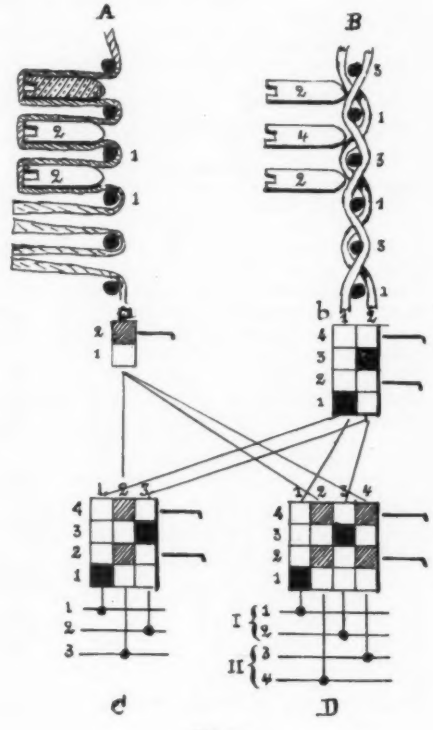


FIG. 4.

2. The ground and pile warps are under different tension, as will be readily understood. The ground warp should be tighter than the pile warp, as the latter is delivered intermittently. In hand weaving the ground warp is under a fixed tension and delivered by positive motion. The pile warp is alternately tightened and released by a special device.

3. A number of wires must be inserted before cutting the pile, and frequently it is found necessary to dampen the filling. Because of the variable tension on the pile there is danger of the threads being pulled from the cloth if the pile is cut as soon as it is woven over one wire. As a result several wires are woven and the cutting done on the first wire farthest from the reed. The number of wires left in the cloth during weaving varies from 2 to 20 and depends on the weave and density of the fabric. It is a good plan to moisten the filling for tightly woven goods as that facilitates the weaving and enables the filling to be driven into the warp more easily.

4. As the ground and pile warps are generally different materials and always under different tension it is usual to arrange the harness into two sections, one serving for the ground warp and the other for the pile warp. The latter are hung nearest to the reed.

5. The warp is reeded to correspond with the weave. All of the pile threads should be arranged in the reed in the same relative position to the ground threads. If, for example, the fabric is warped 1 ground thread 1 pile thread, 2 ends should be drawn in each dent. If woven on the hand loom the pile thread is at the right of the ground thread in the dent. On the power loom the pile thread is at the left of the ground thread in each dent. This is necessary in order to prevent a twisting of the threads when the wire is pulled out.

6. In order not to damage the face, the cloth is wound by contact between the roller and the back of the fabric. On the power loom the cloth is drawn by contact with a roller covered with perforated metal and is then delivered to a second roller on which it is wound. Care is taken not to have the temples affect the face of the velvet. On the hand loom the temple comes in contact only with the back of the cloth while the temples on the power loom operate only on the selvage.

(To be continued.)

The exports from the Plauen district during the six months ending June 30, 1909, amounted to $2,804,286, an increase of $1,138,388 over the same period last year, of which $2,562,045 represents the exports of Plauen.

LEAVES FROM A WORSTED DRAWING MANAGER'S NOTEBOOK.

BY J. B.

It is a good plan when taking charge of a drawing plant, whether open or French, to standardize the machines and by testing determine whether a given change wheel will give the same amount of draft on all the boxes. If not, the sooner the difficulty is remedied the better. This is neither as difficult nor as expensive as it may appear to be at first sight. The front and back rollers are usually made the same size for the same boxes by all the leading makers. The greatest difference is in the so-called standard and double stud wheels. If these are made uniform, it does not matter which set may be going onto a new run. When the manager has settled what draft or twist is required he can easily find what change wheel to use for the required count, by merely looking up his table of relations between change wheel and counts. As most change wheels are plainly stamped with the number of teeth, he can easily see whether his orders have been carried out or not. It is also necessary to have standard samples of the different qualities of material, so as to be at any time ready to deal with a repeat order. The drawing lay-out for a number of lots of wool are given below. None of them were made from one class of wool alone, but each consisted of different grades for the better class of dress goods. Each of them was thoroughly tested and gave a good spinning roving. The home grown wools, lots 1, 2 and 3, are low, medium and fine. The quantity of the Australian and other Botany wools is indicated by the counts they would spin to.

No. 1, Standard 42s.

Made from 5 parts of 2s cheviot wethers and 10 parts of 2s Kent wethers.

Box.	Ends up.	Draft.
First gill box	7	7.5
Second gill box	7	7.5
Spindle gill box	7	7.5
First drawing box	4	7.5
Second drawing box	5	7.5
Third drawing or weigh box	6	7.5
Finishing	4	7.5
Slubbing	2	7.5
Roving	2	6.8

40 yds. at weigh box = 92 drams.
40 yds. roving = 3.8 drams.

No. 2, Standard 42s.

Made from 6 parts of 2s Kent wethers, 2 parts of 2s Hogg, 2 parts of 1s Kent wethers and 3 parts of 1s Southdown.

Box.	Ends up.	Draft.
First gill box	6	8.2
Second gill box	7	8.2
Spindle gill box	7	8.4
First drawing box	5	7.4
Second drawing box	5	7.4
Third drawing or weigh box	6	7.4
Finishing	4	7.2
Slubbing	2	7
Roving	2	8

40 yds. at weigh box = 96 drams.
40 yds. roving = 3.7 drams.

This being long, firm wool, the heavy drafting is at the beginning and end.

No. 3, Standard 48s.

Made from 6 parts of 2 1/2 wethers, 3 parts of 2s wethers and 3 parts of 3s Southdown.

Box.	Ends up.	Draft.
First gill box	6	6.5
Second gill box	6	6.5
Spindle gill box	4	6.5
First drawing box	4	6.8
Second drawing box	5	6.8
Third drawing or weigh box	6	7
Finishing	3	7.3
Slubbing	2	7.3
Roving	2	8

40 yds. at weigh box = 99.8 drams.
40 yds. roving = 3.1 drams.
Note gradual increase in drafts.

No. 4, Standard 48s.

Made from 5 parts of Kent wethers, 5 parts of 2s Southdown and 2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	7	6.8
Second gill box	5	6.5
Spindle gill box	4	6.5
First drawing box	4	7
Second drawing box	5	7
Third drawing or weigh box	6	6.7
Finishing	3	7
Slubbing	2	7
Roving	2	6.7

40 yds. at weigh box = 73.3 drams.
40 yds. roving = 3 drams.

The 2 parts of 64s is added to make up for quality of Kent wethers, also to give finish to the piece.

No. 5, Standard 48s.

Made from 6 parts of 2s wethers, 3 parts of 3s wethers and 1 1/2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	6	6.4
Second gill box	6	6
Spindle gill box	4	6.2
First drawing box	4	6.4

Second drawing box	5	6.4
Third drawing or weigh box	5	6.3
Finishing	3	7
Slubbing	2	7
Roving	2	6.5

40 yds. at weigh box = 74.8 drams.
40 yds. roving = 3 drams.

Note difference in ends and draft from previous sample, as well as in smaller quantity of 64s Botany to balance low wools.

No. 6, Standard 50s.

Made from 9 parts of 3s Southdown and 1 part of 60s Botany.

Box.	Ends up.	Draft.
First gill box	5.5	6.2
Second gill box	5	6.2
Spindle gill box	4	6
First drawing box	4	6.1
Second drawing box	5	6.1
Third drawing or weigh box	5	6.2
Finishing	3	6.6
Slubbing	2	6.6
Roving	2	7.3

40 yds. at weigh box = 75 drams.
40 yds. roving = 2.4 drams.

No. 7, Standard 50s.

Made from 4 parts of 3s wether, 2 parts of 3s Southdown, 1 part of 2s wethers and 2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	5.5	5.8
Second gill box	6	6
Spindle gill box	4	5.6
First drawing box	4	7.1
Second drawing box	5	6.4
Third drawing or weigh box	6	6.4
Finishing	3	6.3
Slubbing	2	7
Roving	2	6.8

40 yds. at weigh box = 72 drams.
40 yds. roving = 2.8 drams.

No. 8, Standard 52s.

Made from 6 parts of 2 1/2 wethers and 2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	5	6
Second gill box	6	6
Spindle gill box	4	6
First drawing box	5	6.6
Second drawing box	5	6.6
Third drawing or weigh box	6	6.5
Finishing	3	7
Slubbing	2	6.4
Roving	2	7.1

40 yds. at weigh box = 74.4 drams.
40 yds. roving = 2.3 drams.

No. 9, Standard 52s.

Made from 10 parts of 3s wethers and 2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	7	6.6
Second gill box	5	6.4
Spindle gill box	4	6.4
First drawing box	4	6.4
Second drawing box	5	6.4
Third drawing or weigh box	5	6.3
Finishing	3	6.8
Slubbing	2	6.8
Roving	2	7.5

40 yds. at weigh box = 74.4 drams.
40 yds. roving = 2.7 drams.

No. 10, Standard 54s.

Made from 3 parts of 3s wethers, 3 parts of 3s cheviot Hogg, 3 parts of 4s Southdown and 2 parts of 64s Botany.

Box.	Ends up.	Draft.
First gill box	7	6.5
Second gill box	4	6.3
Spindle gill box	4	6.3
First drawing box	4	6.5
Second drawing box	5	6.5
Third drawing or weigh box	5	6.5
Finishing	3	7
Slubbing	2	7
Roving	2	7.5

40 yds. at weigh box = 72 drams.
40 yds. roving = 2.6 drams.

No. 11, Standard 54s.

Made from 5 parts of 3s Grey, 3 parts of 64s Botany and 2 1/2 parts of 54s laps.

Box.	Ends up.	Draft.
First gill box	8	6.3
Second gill box	5	6.3
Spindle gill box	4	6.3
First drawing box	4	6.5
Second drawing box	4	6.5
Third drawing or weigh box	6	6.5
Finishing	3	7
Slubbing	2	7
Roving	2	7.5

40 yds. at weigh box = 72 drams.
40 yds. roving = 2.6 drams.

The foregoing may be sufficient to show the possibility, and sometimes the necessity of using larger or smaller quantities of fine and low wools to make a well balanced quality. These tables are useful for comparisons. The number of ends up at first gill will, of course, vary according to the weight per 10 yards of top, as all top makers have not adopted one standard weight. All cans at gill boxes and all bobbins at weigh boxes should be tested regularly. With a given wheel or knocker off the same number of yards will be on all bobbins, whatever quality may be in process. A standard weight per bobbin can be set, and by thus weighing in the bulk, instead of weighing 40 yards, the slightest variation is easily detected.

The consumption of cotton in 1909 was 9,370,000 bales by the European mills and 4,766,000 bales by the United States mills.

The worsted tops combed in British mills in 1907 on commission amounted to 168,899,000 pounds. Only 19,856,000 pounds was combed for sale.

INTERNATIONAL SHORT TIME.

(From Die Industrie, Vienna, Austria.)

The leading journal of the American textile industry, The Textile World Record, in an article by its editor, remonstrates with the American cotton manufacturers because they have entertained the idea of joining the European cotton spinners and manufacturers in bringing about organized short time in spinning and weaving mills throughout the world in order to bring about a reduction in the price of American cotton. He maintains that the industrial conditions in the cotton trade of different countries vary so widely that organized short time is impracticable. In recent years the price of cotton has greatly increased. During the past year the export of cotton from the United States amounted to 3,900,000,000 pounds, valued in round numbers at $460,000,000. Since last summer the price has risen from 9 1/2 to 15 cents a pound.

The editor further maintains that much higher wages prevail in North America, while the advantages of a protective tariff are offered to the manufacturers, but not to the producers of the raw material. Moreover, the American grower must compete with Egypt and India, where wages are very low. For these reasons it is not for the interest of the United States to bring about a reduction of the consumption of American cotton by European mills. The claim that organized short time is aimed at the speculator is rejected. Dale thus proclaims a fixed policy for the American cotton trade as regards their relations with the European cotton manufacturers.

The Americans know very well that unfortunately we are dependent on their supply of cotton. Their independent position is due to this control of the cotton supply and to their protective tariff. This situation should stimulate us to exert every effort to develop our home production and make us independent of the United States by extending cotton culture in Africa. Because of the political weakness of Austria it is not likely that we shall within any conceivable time obtain African colonies, but Germany, particularly through the efforts of Minister Dernberg, has made considerable progress in this direction.

REMOVAL OF ENGLISH LOOMS TO THE UNITED STATES.

Interviewed regarding a telegram from New Orleans, reporting the proposed removal of Lancashire mills to the Mississippi, Mr. ex-Alderman Nelson said it could not relate to his firm, Messrs. Nelson & Sons, as they had not so far made inquiries in America. The position of the firm is explained by Mr. Nelson in the following letter he has sent to the Press:

"I find that some people are trying to put the meanest interpretation they possibly can on what I said. What I did say was that we intended making investigations with a view to moving three or four hundred looms to America, not all our plant, and we feel certain it would be better both for the hands and ourselves.

"This has been brought about by the fact that since 1890 we have made large quantities of goods for the United States, and at some periods we have had over a thousand looms on for this country. The Americans have altered the tariff two or three times in that period; but we have found ways and means of keeping the trade by reconstructing the cloth and getting out new cloths, which has enabled us to keep on supplying goods all the time.

"The tariff on cotton goods before 1909 was about 40 per cent. In their tariff bill of 1909 they have increased the duty by six cents per square yard on goods of which we have made large quantities. They have now put the tariff wall so high that there appears no possible chance of getting over; and our idea was that if we reduced our looms by three or four hundred it would mean more work for the looms we have left here, because 2,490 looms would get the same work that we had previously divided between 2,800 looms.

"We have confidence, if the looms were got over to the States, both the machinery and the labor would be kept fully occupied.

This is another case where the 'free' trade Government has not moved hand or foot to try to minimize the difficulty and help the trade."—The Textile Mercury.

ENGLISH NOTES.

(By Our Special Correspondent.)

In the wool market the news is going round that "the Americans"—meaning such of them as come to buy over here—are convinced that all kinds of coarse wool are going to be dearer. Dealers in crossbred and English sorts have no idea that prices will come down. Unable to find all the fleeces they would like some United States worsted mills have been filling up requirements with skin wool of North hogg, Shrop hogg and similar quality. I hear that some of the North skins shipped were singularly well got up by the pullers.

* * *

Some quiet sales of silk noils for America are recorded and it is understood that the buying is not for immediate consumption. All the same, holders have begun to prick up their ears and to inquire whether the carded woolen mills in the States are coming round to nap effects. Eight years ago American demand was principally responsible for running silk noils up from about 6 to 60 cents per pound. American orders for spun tussah yarn are answerable for a rise from 16 to 26 cents in China tussah wastes, the raw material of that industry.

* * *

The announcement that James Nelson & Sons of Nelson, Lanes, intend to transfer about a quarter of their plant to America is apparently a consequence of the Payne tariff. Like others in their town Nelsons have been weaving cotton italians, in part for the American market. They buy the yarn and turn it into cloth to be fast-black dyed, permanent-finished, made up and shipped by Bradford or Manchester people. The town of Nelson is a place of 40,000 inhabitants, 140 weaving firms and 50,000 looms. Its looms have increased some 10,000 in ten years and the removal of a few to an enclosed market can be regarded by the remaining manufacturers with a good deal of complacency. For present requirements Nelson has too many looms and—as noted a few months ago—its manufacturers have been compensating each other for idleness by levies on working looms. Practically all the 140 manufacturers began as workingmen.

From two to four million dollars' worth a year of cotton linings of the Nelson type have been shipped from the Bradford consular district to the United States. Large shipments are made to China—two million pieces of such goods were sent last year to Shanghai alone. In greater or less measure these cotton italians and venetians go to all countries and the domestic consumption is more than a trifle.

* * *

There is a powerful suggestion of America in the news that John Crossley & Sons, Ltd., Halifax, are contemplating the establishment of branch carpet works abroad. Charles Crossley was in Canada examining sites at about the time that Brintons of Kidderminster announced their occupation of a site at Peterborough, Ont. Word leaked out soon after that Canada did not seem to the directors to be ripe and that what should have been done was to build mills twenty years ago in the States. Firths of Firthcliffe, N. Y. and of Bailiffe Bridge, Yorkshire, have had uninterrupted success in both countries since their establishment in America. Large additions are being made to the English carpet mill and Sir T. F. Firth's death discloses the interesting fact that he had roughly a $2,000,000 fortune. His two sons are also rich men.

* * *

It will be old news that Lancashire and Yorkshire have rejected the prospect of a tariff; rejected it, one might say, with indignities. The highest pro-tariff quarters recognize that until the textile North is converted nothing can be done. Plans are being shaped accordingly, but in a general way Northern politics and opinions are not man-

ufactured in the South. The struggle has brought to light certain differences of opinion. Owners of 50,000 cotton looms representing $7 1/2 millions have avowed the belief that "the cotton trade has everything to gain by a Government being empowered to bargain for the better entrance into foreign markets of our staple goods." The signatories represent 7 per cent. of the cotton looms in the country and their interests are not wholly identical with those of spinners who hold out unflinchingly against protection. It seems that once, in exchange for a lower duty on currants, Goschen did get lower rates on English cotton entering Greece. The instance is not important in itself.

In the woolen trade a number of manufacturers have turned from their old allegiance to favor protection. James Mathers of Leeds, William Murgatroyd of Yeadon and Watson of Morley are the names of a few. In view of the activity of the woolen and worsted branches tariff-reform orators have done themselves harm by preaching bad trade in the Yorkshire districts.

* * *

Designs for men's wear are checks for next season. The coloring is grey and in a large worsted selection lately made for Canada there is hardly an effect that is not black and white. Dice or draughtboard checks, rather oblong than square, have been adopted by the most fashionable tailors. The large trade will of course be in more modest designs. Our worsted men are striving after neatness in three-and-three and four-and-four checks, using large overchecks and all sorts of casual irregularities to break the monotony. Squares are foremost, but some diamond styles are being tried.

A notable hit has been made with a silk-striped cloth for dinner jackets of which a sample is sent. [This can be seen at our Boston office.] The stripe is on a pin head weave and as the silk should not be bright alternate ends are used of ordinary and reverse twist. Further styles for dinner jackets are still being got out. Another use for silk is on blues. The goods are woven with a silk border, which is to run down the trousers' seam. Blue appears to be used for formal dress in the South American countries. Bordered trousers may be more admired there than in England.

* * *

Dyers call the wool dress goods shades for this year inordinately "drabby" and their trouble has been to get little enough of the characteristic color on. For example it is no use to treat the fashionable violet as violet. The dyer has to proceed as if dyeing blue, giving only a touch of the violet tone and the case is similar with the green-moles, salmon-fawns and other bastards. The shades are neither one color nor another and something simpler or clearer will be welcomed in the dye houses. There is the consolation that softness has gone as far as it can get and that presently there will be a revulsion of taste from the tame designs and tamer colors now in vogue.

A hint of the change in design for custumes is found in the reintroduction or black and white shepherd checks, which are selling now in all sizes from quarter to three-quarter inch squares. In the large size the effect is almost dazzlingly spirited.

* * *

A cotton spinner addressing fellow spinners at Oldham calls the Chamber of Commerce reports from the wool manufacturing districts "splendid." Individuals may demur to the term, but woolen and worsted manufacturers on the whole are happy and worsted mills are ordering in new machines. Worsted spindles are 25 per cent. dearer than formerly. Gill boxes cannot be got from the chief maker under a year. Looms can neither be bought nor hired in time to ease the present pressure. Cotton machinists and makers of dyeing and finishing outfits are not nearly so well off. The home demand for worsted machinery is large. Spinners have been ordering all the extra plant for which they had room and power and some are consulting with their landlords

about building. Daniel Illingworth & Sons are adding to their large outfit 10,000 new spindles. A Wibsey firm is increasing its spinning and weaving plant by 30 per cent. and others are regretting that more machines mean new engines, which they are reluctant to buy.

In addition there has been a large movement of worsted machinery towards America. The Bradford U. S. consular area includes the towns in which worsted spinning machines are principally made and the item "Machinery" in the consular exports returns consist predominantly of this class. The value of that item is $105,000 for January; roughly twice as much as in January of last year. In 1909 the Bradford export of machinery was $1,034,000 and just under a million was shipped to the States in 1906, with smaller quantities in the years intervening.

• • •

Another record breaking year is expected by the waterproof and rainproof people, albeit new operations have hardly yet got beyond the pattern stage. Pious hopes are expressed that the waterproof makers will not kill their goose by too liberal administration of boiled linseed oil. Rubber is still very dear, but the price of waterproofing single textures remains around 36 cents for sixty inches wide. Double textures costing 25 cents per yard before rubberizing are charged at about $1.12 after. Allowing for the doubling of the fabric the price of 62 cents for rubberizing double textures remains. These are the approximate rates for treating cheap mackintoshes. Prices for treating heavy motor coats and so on run to $1.75 a yard and perhaps higher. For rainproofing by the acetate of alumina and wax process the usual charge is three cents a yard, 56 inches wide.

These considerations move one to wonder what the cost may be of cork lining fabrics after the manner of some French samples received. Samples have been shown previously and a Bradford company endeavored to work a kindred process, but neither in the trade nor out of it can one hear of the existence of any bulk. A cork merchant to whom samples have been shown comments on the impossibility of getting cork in large sheets. Even to get a two-yard length would be difficult and there are evident objections to the existence of a joint or seam occurring elsewhere than at the seam of a garment. Supple as the cork has been rendered, it is stiff enough to impede the recovery of shape after creasing and the very interesting specimens are clouded with an unsolved doubt of their practical utility.

• • •

Some editorial strictures have been passed upon the habit of undervaluing assets to conceal the real extent of the profits made by Lancashire spinning mills in fat times. It is none too certain that concealment is not practiced elsewhere, but Lancashire barely troubles to make a secret of the fact that stores of oil, coal, yarn or raw stock have been written down or off in boom times. The jerrymandering is done after consultation and the treasurer, without a smile on his face, certifies the values as at market price or under. The practice is objectionable, but what is to take its place? Excessive visible profits stimulate new competition and new demands for higher wages. Then investors, bankers and everyone thinks better of a concern that pays a steady 10 per cent. than of one that swings between 25 and nothing. Lister & Co.'s meeting at Bradford is proof that stockholders are not content unless they finger any surplus they can see. These silk seal makers divide 5 per cent. this year, although after all necessary provisions they could pay 9 per cent.

There have been more objectionable means of disposing of large surpluses than a tactical undervaluation. In former days boards have speculated with the funds or have voted themselves and their connections salaries, bonuses or generous expenses in the effort to get the money out of sight. Lancashire prefers any system that keeps the surplus in the concern.

• • •

From January experience an instance is taken of how the advance in crossbred works. When wholesalers made their spring

arrangements in dress goods 40s tops were in the region of 25 cents. Wholesalers do not plunge in these days, but when the season has opened and the situation is clearer they repeat. Merchants chose the likeliest goods they could find at round 27 cents for resale in half-pieces at 34 cents to drapers who sell to the public at 47 cents (1s. 11d.) a yard.

In January they were ready to repeat, but 40s tops had gone to 30 cents and yarns with them. They would have had to ask 36 cents for the cloth, which is more than the draper will pay. As it is useless to expect him to change either his buying or his selling limits the pattern is thrown out as soon as the stock is sold. The draper demands value at 34 cents and does not inquire whether goods are combed worsted or carded woolen so long as they are the most stylish at the favorite, popular price. Observe that, whatever he may pick up later, the worsted manufacturer loses the order that he expected to take and would have taken had prices remained constant.

* * *

The saying that carded woolen can never be standardized is familiar in both countries and it is true that carded woolen cannot be standardized as worsted is. This is not to say but that manufacturers can do much to work to their own standards, given capital and confidence enough. I have in mind a carded woolen man who is in London now picking up ideas for the coloring of his 1911 spring costume tweeds. He will bring back several ideas and work them out in pattern blankets. Choice will be made from these and before long this mill's colors will be fixed and unalterable.

There will be nine warp colorings and about a dozen fillings and he will put into execution 40,000 to 50,000 pounds of each. Playing on these he will get out well over a hundred ranges and, no matter which of them sell, the yarn for them will be on the bobbins; and whether one piece of a sort is wanted or a hundred, work will go straight ahead. If history repeats itself he will be giving deliveries in two weeks while neighbors of his who have everything to dye and to spin against orders will be wanting nine weeks and ten. The instance is quoted from the low to medium dress tweed trade, but practice not unlike this obtains in the Colm Valley men's tweed line. Apart from the economy, look at the convenience to all parties concerned.

* * *

Raised blankets with colored headings are now very generally converted into "reversibles" for purposes of sale. The operation consists simply in striking the pile across the blanket at the back as well as on the face. The colored fiber is thus stretched along material of its own color instead of straggling in ragged fashion over the next color or the white. This, which is considered by drapers to enhance the appearance, is done by warehousemen using hand-cards. The hand-cards in present use seem all to be of brass wire. Brass is preferred for the reason that a steel wire tooth lodging in a blanket is very apt to create an iron stain.

CARD GRINDING.

(From the Grinding and Mounting of Card Clothing recently published by Dronsfield Bros., Ltd., Oldham, England.)

(Continued from February.)

Figs. 13 and 14 show the shaped tail end resulting from the extraction of the teeth. The lap, as shown by the sketch, is divided into varying sections, commencing from the chalk-mark backwards. The full width of 8 ribs is left intact for the space of 10 inches; at this point extract the rows of teeth from the eighth or last rib and continue the extraction for the space of 18 inches, commencing with the last row, then proceeding with the last two rows, and eventually three rows, thus gradually reducing the width of fillet from eight to seven ribs. Repeat the extracting process in a similar manner for a further 18 inches, and so on, extracting from each rib until the fourth rib is reached. The fourth rib must be treated the same way right up to the end of the filleting. Fig. 15 illustrates the rib setting. Fig. 16 explains the method of the gradual extraction of the teeth from the ribs; the sketch depicts one rib only.

We have now the following result. Fig. 13 (cylinder fillet):

Thus shaped, the filleting starts with a width of 3 ribs and gradually widens, as illustrated, to the full 8 ribs. At this point the filleting, having made one complete circuit round the cylinder, will have to be cut and fitted so that in continuing its course it will not overlap the 3-ribbed commencing end.

The doffer, say 24 inches in diameter, would have the following dimensions, Fig. 14:

From	end	for	space	of	8	inches,	6 ribs allowed for stretch.		A
"	6th	rib	to	5th	rib	11	"	(6th rib extracted)	B
"	5th	"		4th	"	11	"	(5th ")	C
"	4th	"		3rd	"	11	"	(4th ")	D
"	3rd	"		2nd	"	34	"	(3rd " 2 ribs left)	E

Total length of lap, 75 inches — circumference of doffer.

Having cut the tail-end as described, the next thing is to commence wrapping. Take the cylinder first. First find a suitable plug, preferably the nearest to cylinder edge, and fasten the narrow 3-ribbed tail-piece with two tacks, Fig. 17; wrap on the cylinder until 4-ribbed width is attained on the cylinder surface; then put tension on the filleting up to, say, 300 lbs., but gradually and gently; tight tail-ends are of the greatest importance. Now secure the narrow portion by tacks in two plugs, and continue wrapping until the commencing point is nearly reached. With the tension well up, secure the filleting with a double tacking crossways. Having thus secured the first lap upon the cylinder, the tension must be gently relieved in order to save the fastenings; a few additional tacks are inserted in the narrow end of the fillet to ease the strain, and preparations are now made to fit the filleting which is to form the second or dove-tailed lap.

(To be continued.)

DRAFT AS APPLIED TO COTTON YARN PREPARATION MACHINERY.

BY BOLSTER.

(Continued from February.)

Another tension draft occurs between the 5-inch calenders and the 12-inch calender rolls, and is represented by the following:

From	end	for	space	of	10	inches,	8 ribs full width allowed for stretch.		A
"	8th	rib	to	7th	rib	18	"	(8th rib extracted)	B
"	7th	"		6th	"	18	"	(7th ")	C
"	6th	"		5th	"	18	"	(6th ")	D
"	5th	"		4th	"	18	"	(5th ")	E
"	4th	"		3rd	"	75	"	(4th " 3 ribs left)	F

Total length of lap 157 inches — circumference of cylinder.

$72 \times 13 \times 12$ inch $\div 30 \times 72 \times 5$ inch $= 1.04$ draft.

Then:

$1.318 \times 1.8 \times 1.028 \times 1.04 = 2.51 +$ total draft.

RIBBON LAPPER DRAFT.

The ribbon lapper draft is used for preparing the laps from the sliver lapper, and making a more uniform sheet of cotton to feed to the comber. There are four pairs of drawing rolls very similar to the drawframe in its entire action, except that laps are fed and a lap delivered, while on a drawframe slivers are fed and delivered.

Owing to the number of times the draft rule has already been explained, the division of the draft between each pair of rolls will be outlined, but the amount of draft at each point will be left for the reader to calculate as an example for practice, from gearing shown in Fig. 6.

The principal draft is divided between the four pairs of drawing rolls, while tension drafts occur between the lap rolls and back drawing rolls, and also between the front drawing rolls and the various calender rolls.

For test examples find the draft between each of the following points on a ribbon lap

machine geared for common rolls if a 50 draft change gear is being used.

1. Find draft constant from the 2¾-inch lap rolls to the 12-inch fluted calender rolls?
2. Find total draft if using a 50 draft change gear?
3. Find draft between lap rolls and the back (4th) drawing roll?
4. Find draft between 3d and 4th drawing rolls?
5. Find draft between 2d and 3d drawing rolls?
6. Find draft between front (1st) and 2d drawing rolls?
7. Find draft between front drawing rolls and the 3-inch table calender rolls?
8. Find draft between the 3-inch table calender rolls and 5-inch smooth calender rolls?
9. Find draft between the 5 and 12-inch calender rolls?

Answers to practice examples:

1. 300.8 draft constant.
2. 6.01 total draft.
3. 1.018 draft between lap rolls and drawing rolls.
4. 1.25 draft between 3d and 4th drawing rolls.
5. 1.48 draft between 2d and 3d drawing rolls.
6. 3.027 draft between 1st and 2d drawing rolls.
7. 1.049 draft between drawing rolls and table calender rolls.
8. 1.00 draft between 5-inch smooth calender rolls and table calender rolls.
9. 1.008 draft between 5-inch smooth calender rolls and 12-inch fluted calender rolls.

COMBER DRAFT.

Referring to the diagram, Fig. 7, of comber gearing, the regular rule for draft may be applied and by omitting the feed gear, or draft gear, the following constant is obtained:

47 × 55 × 22 × 38 × 5 × 60 × 2 inch ÷ 35 × 20 × 23 × CG × 1 × 69 × 2¾ inch = 424.43 draft constant.

The above constant divided by feed change gear will give draft between lap rolls and coiler calender rolls, using a 69 coiler gear meshing into the 60 on cylinder shaft.

Feed Gear	Total Draught	Feed Gear	Total Draught
13 Teeth	32.65	17 Teeth	24.97
14	30.32	18	23.58
15	28.30	19	22.34
16	26.53	20	21.22

COMBER INTERMEDIATE DRAFTS.

The above draft is divided into practically five intermediate drafts, viz:

1. Between wood lap rolls and feed rolls.
2. Between feed rolls and table calender rolls.
3. Between table calender roll and drawbox.
4. Between back roll and front roll in drawbox.
5. Between drawbox calender roll and coiler calender rolls.

The second and fourth are attenuating drafts and are the most important and also the largest, while the remainder are tension drafts, where sufficient tension is to be maintained while at the same time strain must be avoided. These conditions are regulated by change gears being placed in convenient positions where a slight change can be made.

The draft between wood lap rolls and feed rolls is practically dependent upon the pull exerted upon the lap by the feed rolls, as the rolls upon which the laps rest only unwinds the lap by frictional contact.

47 × 55 × 22 × ¾ inch feed rolls ÷ 35 × 20 × 23 × 2¾ inch lap rolls = .96 draft between lap and feed rolls.

Draft 2 between feed rolls and table calender rolls, is regulated by changing the size of the feed or draft change gear, which is on the same shaft as the five star gear and meshes into the 38 gear on feed roll. This gear is practically the draft change gear of the machine and determines the amount fed per nip, which may be from .18 to .26 of an inch. This gear also effects the combing of the fibers to a certain extent:

38 × 5 × 80 × 21 × 2¾ inch table calender rolls ÷ 17 × 1 × 80 × 142 × ¾ inch feed roll = 6.06 draft

Draft 3 between table calender roll and back roll of draw box is just enough to keep the slivers from running slack on the table. This is regulated by the gear on draw box back roll:

142 × 80 × 24 × 16 × 1⅛ inch draw box

roll ÷ 21 × 80 × 24 × 44 × 2¾ inch table calender roll = 1.01 draft.

Draft 4 or draw box draft is between back roll of draw box and block calender roll, and is usually regulated by two change gears, one on the back roll and another on the end of the front roll, which is the principal draft gear for the draw box draft:

44 × 50 × 45 × 20 × 2¾ inch draw box calender roll ÷ 16 × 45 × 37 × 43 × 1⅛ inch draw box back roll = 4.22 draw box draft.

Draft 5 between draw box calender roll and coiler calender roll is regulated by the coiler change gear with 35 to 75 teeth, and placed on a small shaft in such a position as to mesh into the 60 gear on foot end of the cylinder shaft. With a 69 coiler change gear the draft would equal:

43 × 37 × 45 × 24 × 60 × 16 × 16 × 2 inch ÷ 20 × 45 × 50 × 24 × 69 × 16 × 16 × 2¾ inch = 1.02 between draw box calender rolls and coiler calender rolls.

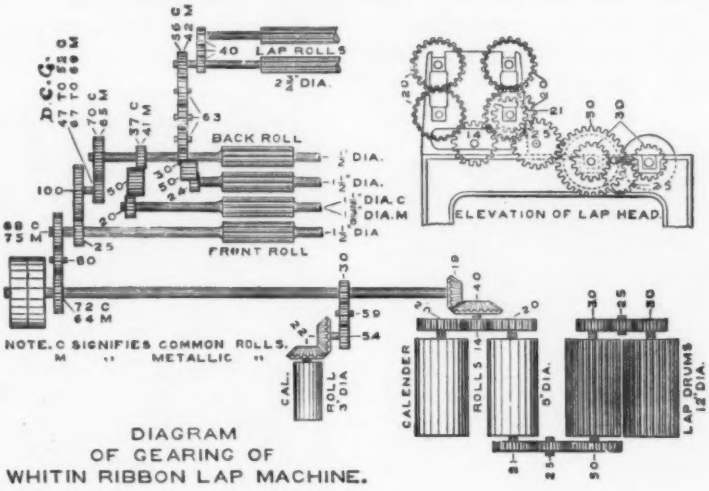


DIAGRAM OF GEARING OF WHITIN RIBBON LAP MACHINE.

FIG 6.

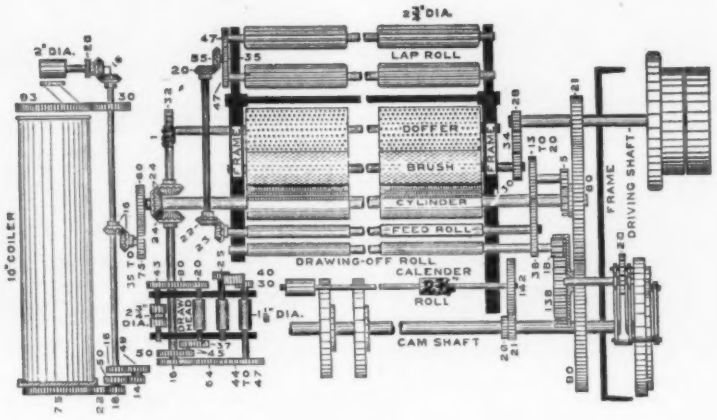


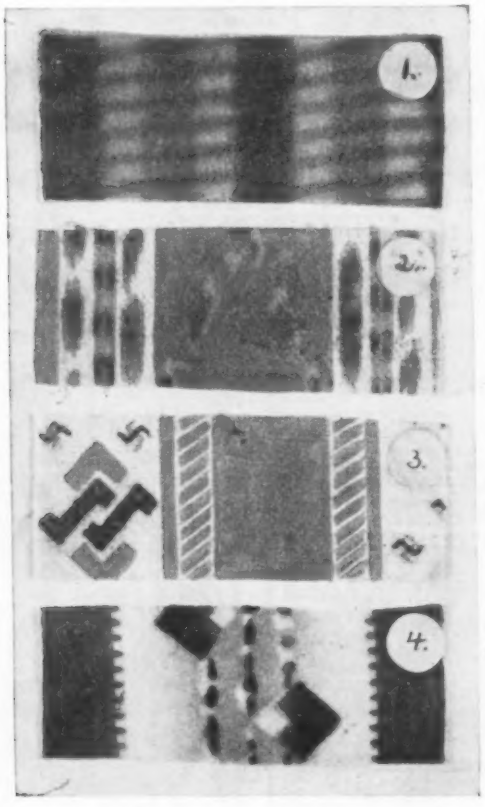
FIG. 7.

(To be continued.)

DESIGNS FOR DRESSING GOWNS, VOILES AND DRESS PRINTS.

BY J. W.

Figs. 1 to 8 are designs for dressing gowns and pajamas. They are manufactured by using a fine cotton warp and very coarse filling. After weaving they are napped as much as possible to cover the warp threads, and afterwards printed.



FIGS. 1, 2, 3 AND 4.

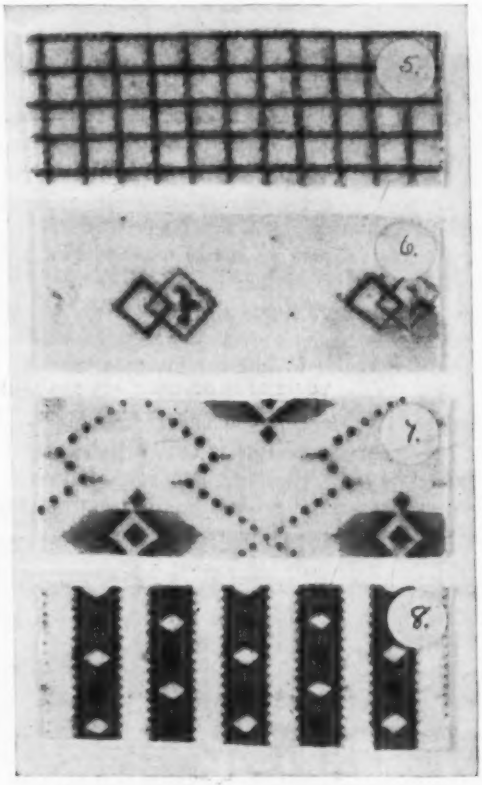
Fig. 1 is a check effect, the stripes being green and blue mixtures, and the check color blue. The weave is plain.

Fig. 2 is a "smoke" effect on a light green ground. Various colors in light shades are those most called for. The weave is a 4-leaf twill.

Figs. 3 and 4 are larger designs and the coloring is heavier, black figuring on heliotrope. Dark slate, light green, blue, scarlet and pink grounds are fashionable. The weave is plain.

Fig. 5 is a black check effect on a white ground and is also being used with colored ground and white check.

Figs. 6 and 7 are very rich styles, chiefly required in the dark shades for figuring, on a white, or light ground.



FIGS. 5, 6, 7 AND 8.

Fig. 8 is a favorite design and one that sells well in all colors.

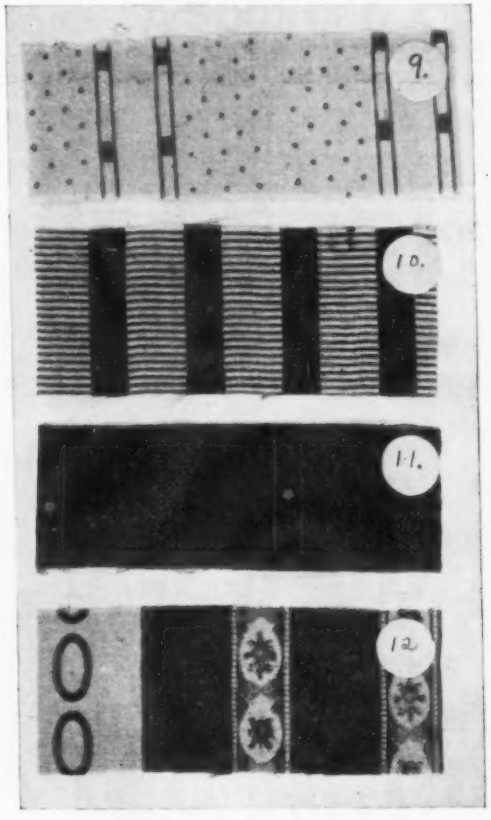
Figs. 9, 10, 11 and 12 are designs for woolen "voiles" and at present are very fashionable for ladies' blouse cloths.

Fig. 9 is a style of stripe and spot effect that is being called for at present in all colors.

Fig. 10 is a fancy check effect selling well in dark navy, black, dark browns and dark green colorings.

Fig. 11 is a neat effect much in favor at present in dark colorings.

Fig. 12 is a distinctly new feature in this class of cloth. The designs required are very large and varied in the coloring. The oral effect is on a cream ground. The body



FIGS. 9, 10, 11 AND 12.

of the design is black and the two stripes are chintz colorings. All colors are fashionable in this class of design.

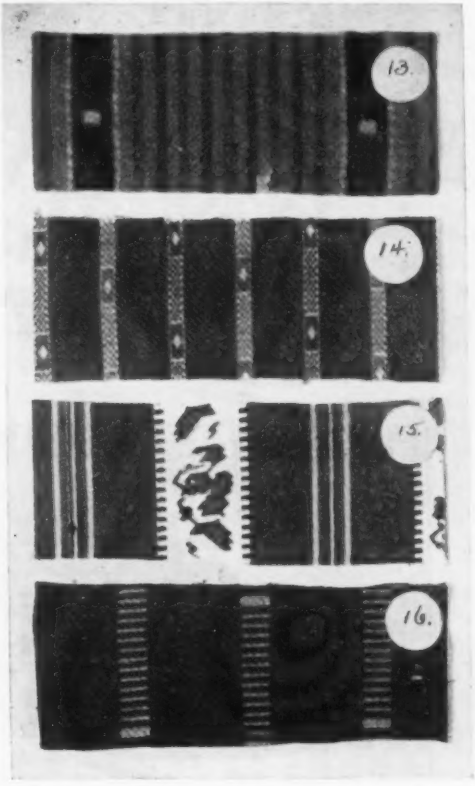
Figs. 13 to 20 are designs for dress prints and the newest styles on the market.

Fig. 13 is a stripe and spot effect. Various shades of grey and slate grounds upon which different colors are printed in stripes are those required at present.

Fig. 14 is an imitation dobby effect which is a good selling style. Various colors of stripe and spot on navy and black grounds are most effective.

Fig. 15 is a neat colored and chintz stripe effect. The grounds desirable are navy, black, or blue, with chintz stripes and narrow stripes of green and black, helio and black, and all black to replace chintz.

Fig. 16. This style is a favorite for cotton



FIGS. 13, 14, 15 AND 16.

blouse cloths in all colorings.

Fig. 17 is a stripe effect. The feature in this class is that the center of the three heavy stripes must be of a different color such as light green, heliotrope, pink, blue, or slate, and the fine lines should be dark colors.

Spotted effects such as Fig. 18 are fashionable in all colorings. The popular colorings for this design are as follows: Dark stripe, blue spot; blue stripe, dark spot; white stripe, fine dotting in black or navy.

Fig. 19 is a good design, very effective in wear. For the ground work dark colors are best in plain print, while the fancy stripe may be in slate and black, green and black, red and black, and blue and black. The key

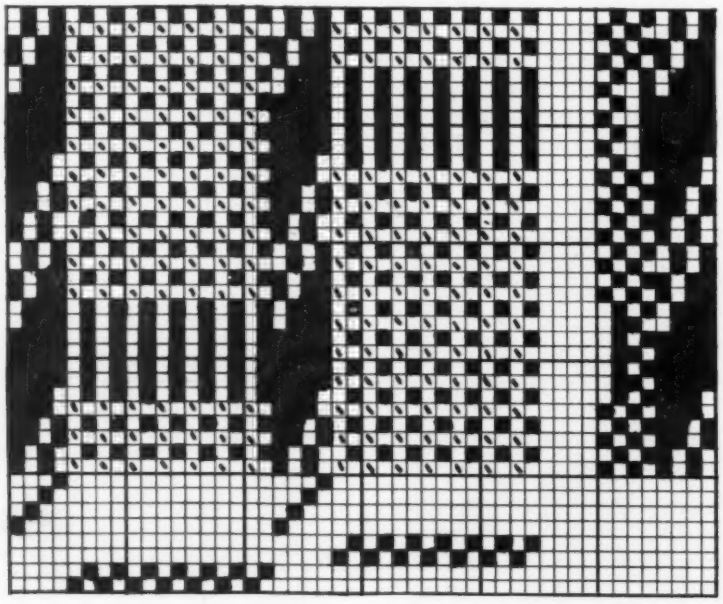


FIG 21.

FIG. 22.

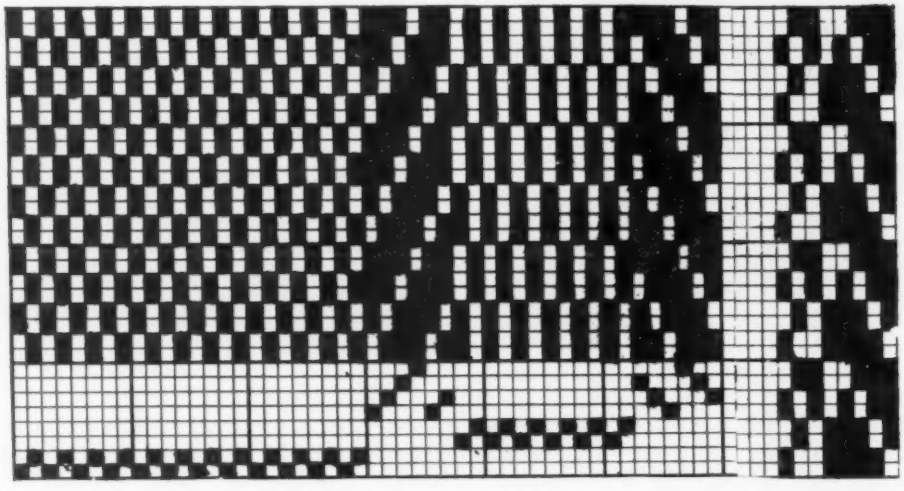


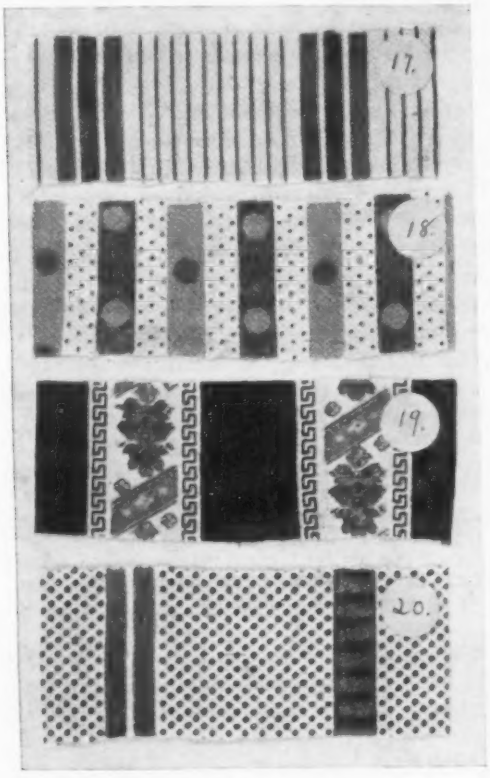
FIG. 23

FIG. 24.

pattern must be the same color as the ground work.

Fig. 20 is a spotted effect upon which various shades of green, blue, pink or brown stripes are printed. Various colors of spotting upon white and colored grounds are desirable.

Fig. 21 is a design for a fancy dobby mercerized effect. The solid squares are for mercerized threads and dots for ordinary



FIGS. 17, 18, 19 AND 20.

threads. The drafting for the heddles is given under the design.

Fig. 22 shows the harness chain. The particulars for production are: 44 dents per inch, two threads in 1 dent; 2/32s mercerized and 32s ordinary yarn for warp; 44 picks of 2/16s for the filling.

Fig. 23 is a dobby poplin design suitable for mercerized warp and filling. The matt weaves are intended for black or dark colors and the twill weave for white threads. The drafting is given. Fig. 24 shows the harness chain. The particulars are: 26 dents per inch; 4 threads in 1 dent; 2/60s mercerized warp; 80 picks per inch of 2/60s mercerized for the filling.

THE AUTOMATIC LOOM.

There are many who think that the automatic looms do not give perfect work, but it all depends on how they are operated. I have 68 36-inch automatic Stafford looms on 48 pick goods, 59 yards to the cut and I get 412 cuts in 6 days. These looms cannot run themselves; a competent person is needed to take charge of them. I go over the belts once a week and card them off and put a little castor oil on them. The tension should be looked after every morning to see that it is all right and that the cloth is slack enough to run easily. I have had charge of 86 looms for the last 17 months and in that length of time not one lay sword or crank shaft has broken. These should be looked over every time the warp comes off to see that the loom is in good condition. When the warp is tied in the front shaft should be about 1/32 inch above the race plate, and the back harness should be about 2/32 inch above the race plate. If the looms are on coarse work care should be taken to have the hoop roller high enough, with a 1/2 inch slat on the breast beam. A soft finish will then be obtained. The shuttle shell should not bind the shuttle too hard. It should not rest against the pin as that will make it too heavy on the loom. If the loom is run too fast the work will be poor. CHAMPLAIN.

The number of cotton spindles operated in the world during the year ending August 31, 1909, was 133,377,000, and the quantity of cotton consumed by them 19,397,000 bales, indicating a weekly consumption of about 373,000 bales. In 1900 the approximate number of spindles was 105,661,000, and the consumption of cotton 15,185,000 bales, or a weekly consumption of 292,000 bales.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

Skirted Wools.

Editor Textile World Record:

I would like to have you explain the meaning of the term "skirted" wools as used in the following passage from paragrarh 368 of schedule K in the Payne tariff law:

"Provided, That skirted wools as imported in eighteen hundred and ninety and prior thereto are hereby excepted." Skirted (1164).

This inquiry was referred to one of the best informed wool men of Boston, who writes us in reply as follows:

You ask me: "What are skirted wools as imported in 1890 and prior thereto," which is the language of the proviso of both the Dingley and the Payne tariff laws?

Skirting the fleece, whether in 1890 or prior thereto, or in 1910, and either prior thereto, or subsequent thereto, has been, is now, and always will be done in but one way. The fleece is opened out, laid flat upon the table, flesh side down, and the rough coarse hair britch and skirt are removed. The fleece is then rolled up and retied ready for classification into qualities or grades. I believe that in some places the shearers shear the sheep down to the skirt and britch, which latter are afterwards separately sheared off.

You will note that there is a radical difference between this skirting and the making of matchings or sorts. In making a sort or matching, each fleece will yield several different sorts or qualities, whereas, all these qualities, with the exception of the skirt and britch, still remain in the skirted fleece. This question of skirting wools for the United States was very thoroughly investigated in the years 1897 and 1898. In fact acting Secretary of the Treasury Spaulding some years before then, certified to the late Judge Lawrence of Ohio, in reply to the latter's letter of inquiry, as to what countries exported their wool in skirted form in 1890 and prior thereto, stating that the wools from Buenos Ayres, Montevideo, and some 19 or 20 other countries were imported in skirted form in 1890 and prior thereto.

In January, 1898, Hon. William I. Buchanan, then Envoy Extraordinary and Minister Plenipotentiary of the United States at Buenos Ayres was provided with the certificate of a number of the oldest and most prominent commission merchants of Buenos Ayres, who had been engaged in the exportation of wool to the United States and other countries for the previous 15 to 25 years, plainly establishing the fact that it had been their practice to skirt the wools for many years prior to 1890. Aberdeen.

The Artificial Silk Industry.

Editor Textile World Record:

I would like information regarding the condition of the artificial silk industry in the United States in order to determine whether it is advisable to establish a plant here.

Syracuse (1159).

According to a report I have before me, the imports for consumption for the year ending June 30, 1907, amounted to 908,099 pounds of artificial silk and 416,522 pounds of artificial horsehair. Under the present law the duty on these goods is 37 per cent., having been advanced from 30 per cent. The average value of the goods on the other side is $1.56 per pound. It remains for the French manufacturer to figure out whether this duty is sufficient to leave a profit after allowing for the difference in the labor cost here and abroad. There is undoubtedly a large and ever increasing market for this article, but, up to the present time, none of the enterprises that have been started in this country to make artificial silk and horsehair have prospered. I have been informed that

the difference in the cost of manufacturing here and abroad was more than the tariff protection. Whether this is correct or not I am unable to determine.

Ferdinand Thun.

Condensing Coarse Wool.

Editor Textile World Record:

We would like to know of a good means for overcoming the difficulty in making well rubbed roping from pure wool similar to the enclosed sample. What is the best lubricant for this class of wool? A great deal of stock drops below the card and the roping runs back on the mule on account of the roping being so loose and fluffy.

Dexter (1158).

In carding coarse wool like the sample submitted, I found the following method to give the best results: The aprons should be set to a 32 gauge with the middle roll on the same level with the rest, giving them a long run and being careful that they do not rub together. They can usually be run at 350 revolutions, but if they shake the card at a less speed they are either worn badly or set wrong. The one that is either too long or too short should be changed. Stop the aprons so that when the eccentric is moved it will go either towards or away from the card, as it will move easier in this position. The eccentric is held by two bolts on the under side. A leader should never be used on either pulley and the belt can generally be made to run properly by adjusting the idle pulleys. Keep the aprons damp or they will not do their work. The best dressing for aprons are made of three parts crude oil and one part degras. With very little heat this mixture will readily blend. Put this mixture on after stripping the cards and the work will go along smoothly. Coarse wool will sometimes drop under the card if the cylinders are allowed to get dull, or are run too fast. The cylinders on coarse wool should run about 70 revolutions a minute.

Lytton.

To answer this question intelligently one should be on the spot, as the question is rather indefinite. Much depends on the adjustment of the rub rolls. The Barker condensers can be made to rub anything if they are properly adjusted and oiled with the right kind of rub oil. Neatsfoot or Castor oil answers very well as a rub oil. Some claim that they are too expensive, but no oil is too expensive that gives satisfaction. Many carders are handicapped by superintendents who insist that because an oil is cheap the carders must use it. Use enough oil or emulsion to keep the stock partly damp. Judgment must be used in oiling the wool. Get the stock damp, but not too wet, and it will work better. If the rubs get filled up with oil use some ammonia as this will cut out the oil and make the rubs take hold better and give better results.

If the stock drops below the cards they must be running too fast. For this grade of stock 85 revolutions per minute is fast enough. If run any faster, there will be a lot of waste made. Setting the cards properly and having them sharp cannot help but give good work. Adding a little powdered rosin to the rub roll will make them take hold better. If "Dexter" is using the old style rub roll he should take each set out and grind down even on a roller grinder and then set close with a little oil on each.

Rogers.

Wire for Cylinders and Doffers.

Editor Textile World Record:

In a shoddy mill using 60-inch cylinders, 3 in a set, running 100 revolutions, we have much trouble with uncarded threads and short staple. What is the best size of wire for the cylinders, doffers and workers for this class of work? Is a slow, thick feed better carding than a fast, thin feed, where the production remains the same?

Carder (1160).

Shoddy should be laid down in the picker room and properly oiled for at least twelve hours and if possible twenty-four hours. It would pick and card better as the rags are then soft and pliable. The teeth in the picker should be sharp. The number of teeth depends on the grade of stock and the staple wanted. It is important to set the feed rolls properly to the cylinder and wrap them with a damp strip of cloth as tight as possible to fill up the distance from the center of the feed roll to the teeth of the cylinder. If the feed roll is properly set good

results should be obtained. One hundred revolutions on 60-inch cylinders is too fast. It does not give time to card properly and only shortens the staple and make a lot of waste. I would advise running 80 revolutions; even 75 would not be too slow, and the card clothing will last longer. I would prefer a medium heavy feed running the feed rolls slow, rather than a thin feed and running them fast. I would advise 32 wire on the first cylinder, 33 on the second and 34 on the last. Set the first with a 30 gauge, second with a 32 gauge, and third with a 34 gauge. If the cards are in good condition and properly set there is no reason why good results should not be obtained. All this can be spoiled by trying to do too much in a given time. It is better to do less and have the work right than to get off a large production and have it spoiled. Rogers.

Defects in Cotton Yarn.

Editor Textile World Record:

We would like to get your expert's advice on a cotton problem which has been troubling us for some time. The yarn concerned is 20s, 25s, 30s and 36s, wound on tubes 5 inches long, Louisiana staple. We have used this quality for over ten years past without ever encountering the trouble mentioned hereafter.

Some two months ago we suggested to the spinners from whom we bought the yarn to use 6-inch cops, with the result that the goods came from the looms full of broken picks caused by weak places such as you will find on the cops which we are sending to you. Reducing the tension on shuttles to practically no tension, reducing the speed of looms, softening of picks, wetting of yarn, resulted in practically no improvement, as we found the yarn so weak in places that it fell apart.

Our subsequent claim on the spinners was not received in good grace, as they claim that the mispicks in the goods were caused entirely by faulty manipulation in weaving. We have no looms running faster than 160 picks on 40-inch goods and none faster than 145 picks on 60-inch goods. We believe that this defect is to be laid at the spinners' door, and it is with this point in view that we would like to obtain an expert's opinion as to the cause and remedy for the weak places. Holbrook (1156).

I find the correspondent's complaint to be thoroughly justified. At irregular intervals, throughout these cops, there are places so soft that they could not possibly cross the loom without breaking, and in many instances they would fall apart while being carefully unwound from the cop without tension. These very soft spots were generally from six to eighteen inches long; there were several from three to six feet long. In four instances a stretch of twenty yards was quite unweavable. There were several instances, also, where the soft spot seemed to be for only two or three inches. Generally on each side of the unweavable spots, there would be some lengths that would draw apart much too readily, but which, without tension on the shuttle, might possibly be woven in. These weak places occur frequently even when not associated with the places which fall apart.

The lengths of the yarn on the four cops were approximately, 356 yards, 344 yards, 252 yards, and 195 yards. Each was carefully unwound, being measured at the same time, and subjected to a considerably slighter tension than any that it would have had in the loom. In this unwinding the first cop broke, or fell apart, 21 times; the second, 14 times; the third, 7 times (it was in this that the soft 20-yard length occurred), and the fourth, 7 times.

The distance between the very soft spots was most irregular. Sometimes two or three of these spots would occur at intervals of two or three yards from each other. The intervals between breakages occurred as follows: up to and including, 10 yards, 21 times; 11 to 20 yards, 11 times; 21 to 30 yards, 5 times; 31 to 40 yards, 3 times; 61 yards, once; 126 yards, once; and 143 yards, once.

The staple of the cotton seemed to be good, and quite as good at the soft spots as elsewhere. The carding or combing was apparently well done, and the yarn was generally very level and clean. The drawing also appears to have been well and evenly executed, and the defective places were not due to any lack of fiber, or thinness at those places.

The entire trouble rests squarely in the spinning and in the faulty action of the mule spindles, so that in the very soft spots only the most trifling twist has been given to the thread, and in many other places the twist has been decidedly insufficient to impart the

necessary strength. If the spinner will take the pains to examine the yarn thoroughly, so as to find the defective places, he will be at no loss as to the proper way to correct them. The fact that the cops were spun six inches long, instead of five inches, should have nothing to do with the matter.

The seller of such yarn as this, if he is an honest man, would make any reparation in reason as a matter of course. I cannot understand how the spinner can have assumed the attitude that he has if he has properly inspected the samples such as were submitted to me.

Considering the fact that, in two instances, I drew off 126 yards and 143 yards of yarn, respectively, without breakage, it may be that in the samples that were sent to the spinner he may have struck a sound length of yarn on each of the cops and so have fallen into the error of supposing that they were sound throughout.

The proper course to pursue is to write the spinners firmly on the subject, send them a number of cops that have proved defective, and a number of untouched ones, and ask him to have every yard of them drawn off, preferably by hand. He should then be in a position to realize that the weaver's claim was thoroughly justified. Should he still decline to acknowledge the complaint, the weaver should demand an arbitration of the matter by the Manchester Chamber of Commerce, which body would no doubt refer the samples to the Manchester Testing House for its report, and the cost of the arbitration and tests should fall upon the loser. If this also was refused it would then be in order to transfer the business promptly to some firm that had different ideas of equity, and it might also be well in that event to send an account of the whole transaction, in detail, to the Manchester Chamber of Commerce, as a matter of record to show how the weaver had been treated.

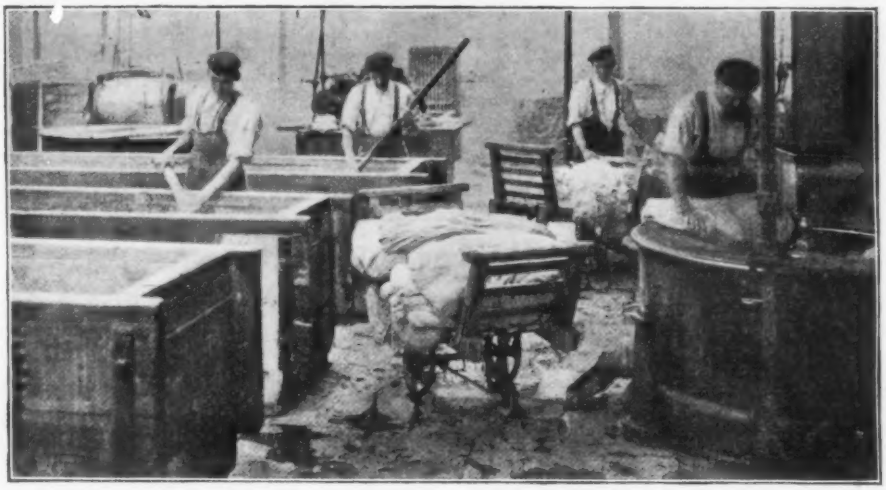
James Chittick.

Silk Crape Waste.

Editor Textile World Record:

Can you give any information about silk throwster's crape waste and its practical uses?

Soie (1163).



BOILING OFF SILK WASTE.

Our English correspondent replies as follows:

Silk for crape weaving is very tightly twisted and the twist of course occurs in the waste. By reason of its twist the waste is unsuitable for producing the usual spun-silk

yarn and is sold at a much lower price than ordinary filature wastes of a similar quality of silk. I have no statistics of production, but can assure "Soie" that there is no difficulty in buying parcels of a few thousand pounds at a time in Europe or England. The waste is found both dyed and undyed and fetches 10 or 12 cents a pound.

Its uses are a little obscure, but I have some reason to think that crape waste has been worked up into yarn for making Eastern rugs and carpets and also into tie bands for leasing silk hanks. There is always an objection to using cotton thread for the last named purpose, for some of it is bound to find its way into the waste and depreciate the latter in the eyes of the waste silk spinner. In pile fabrics a little irregularity in the yarn is not serious and bits of foreign matter are removed easily from the face of the rug. Two ways of working crape waste are known (a) combing and spinning in the gum, followed by discharging in the yarn (b) boiling-off and dressing on flat frames followed by drawing and spinning on the worsted principle. The first gives a bulky, lofty, curly yarn; the second, a more level product. Where dyed waste is used it is advisable to blend the colors thoroughly to ensure a fairly even stripping. When the color or most of it has been discharged redyeing can be done in a large range of shades. The yarn is silk, it is relatively cheap and is miscellaneously suitable for coarse purposes. I know of nobody who works this material exclusively, but have seen it worked on commission pretty continuously and on a fair scale.

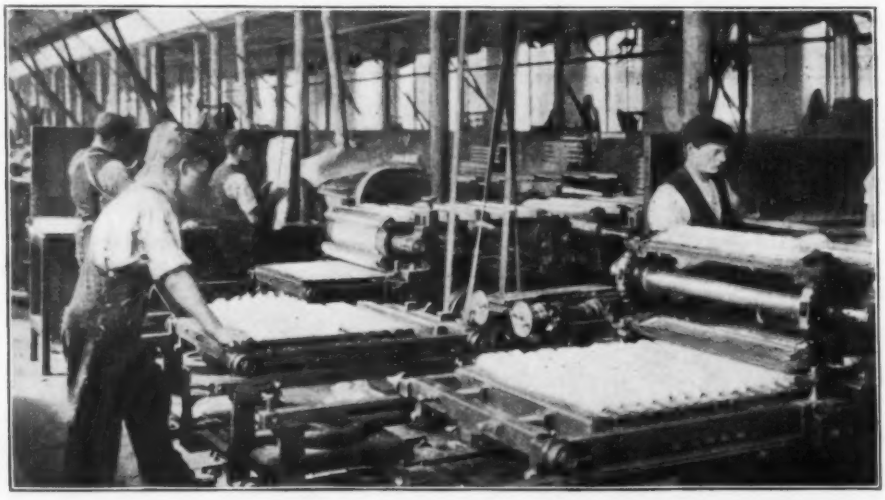
Wessex.

Treatment of Goods after Dyeing.

Editor Textile World Record:

What treatment is the enclosed sample of knit goods subjected to after dyeing?

Gabriel (1157).



THE FLAT DRESSING PROCESS.

This fabric is made from cotton and worsted and plaited so as to throw the worsted inside and the cotton outside. The fabric is then given a very heavy napping before dyeing. The goods are then finished and the fleece is felted in the fulling process. In order to obtain good results the fabric must be given an extra heavy fleece and to do this a good grade of long staple worsted must be used. The felting is accomplished by felting the goods considerably more than is usually done on pure worsteds or merinos. This can be safely done as the cotton thread on the outside will preserve the original tension of the goods.

Merrill.

Knitting Department

THE KNIT GOODS SITUATION.

The past month has not been a very active one in the primary markets, but there has been a good movement along all lines through the jobber's hands, which activity is bound to be felt later on among manufacturers and their selling agents.

Reports from jobbers who are out soliciting fall business indicate that the buyers in the retail institutions are showing a willingness to place fall orders very freely and while the prices asked are considerably advanced over last season's prices, retailers have apparently become reconciled to high prices and are laying more stress on placing their orders with reputable people from whom they are assured of deliveries, rather than in bearing down the prices. There is also considerable light weight business being placed by those buyers who did not give their orders last fall and with the seasonable weather of the past two months, all things point to a good underwear business on both heavy and light weights in general.

Some manufacturers are somewhat chary about taking orders on some of the more popular lines of merchandise. There is no question of the fact that raw material conditions at the present time are difficult ones for them to figure against. While it is said that there are some concessions being made on No. 10 Southern frame spun yarns, it is a perplexing matter for a manufacturer to figure a profit in making 6 lb. ribbed vests and pants for $2.00 per dozen, the price at which they were offered early by two State manufacturers.

The Royal Gem Mills have advanced their price on 6 lb. goods from $2.00 to $2.10, and on 7 lb. goods from $2.20 to $2.30. They also sold an 11 lb. union suit early at $3.87 1/2, but same has now been advanced to $4.00.

The Lion Knitting Co. have advanced their 6 lb. goods from $2.05 to $2.15 and their 6 lb. extra size line from $2.15 to $2.25, and are sold up to August.

McKinnon & Co. of Little Falls showed a line of 6 lb. waste yarn goods at $1.90 in June, but have now advanced them to $2.00 and their 7 lb. garment from $2.10 to $2.20.

The Jesse Palmer Co. are offering a limited number of cases of 7 lb. goods at $2.20, but are not soliciting any business on 6 lb. goods.

The majority of the lines of ladies' 50 cent combed yarn ribbed goods were sold on a basis of $3.62 1/2 for 7 1/2 lbs.

The Utica Knitting Co. are showing a line made in their Richfield Springs Mill, weighing 8 lbs. at $3.62 1/2. The Alliance Knitting Co. claim to have sold up their season's production on the same basis, and their line is now withdrawn from sale.

The Oak Knitting Co. are showing a line, weighing 7 1/2 lbs., on which it is reported some large orders have been placed as low as $3.50. These people also show some ladies' 10 lb. suits in peeler and white tuck stitch at $3.75.

As for men's ribbed and fleeced goods, there has been practically no change in prices, probably due in a measure to the fact that several manufacturers are still soliciting business on these lines.

The Valatie Co. of Rensselaer have put out a new plain stitch men's ribbed garment at $3.75 made of two thread yarn to weigh 12 lbs., on which they claim to be taking a liberal business.

Something decidedly new in the knit goods business is being shown by the Richelieu Knitting Co. of Utica. These people claim to have succeeded in patenting a knitting machine to make a plain stitch fabric, shaped at the sides, but without any seam, and state they are building a mill to make ladies' 8 and 12 lb. union suits to retail at $1.00. The coming of this garment will be watched with considerable interest.

HOSIERY.

Buyers are now practically out of the market and the orders that they have left behind for fall delivery are reported to be

very satisfactory to the mills, making wool goods and also to those making fleece lined cottons. There has not been any heavy buying of staple cotton goods, despite the fact that most manufacturers are insistent in their claims that no lower prices will be obtainable for fall delivery.

The new cotton crop which, if a full one, cannot affect prices downward on hosiery that must be bought to be used during the fall months.

It is true that some manufacturers of staple cotton goods have not yet quoted prices for fall delivery and this fact, no doubt, has had a tendency to make the buyer feel unsettled and uncertain as to the proper course to pursue. This feeling has been further augmented by the positive or implied advice of some manufacturers to jobbers not to place their orders now, but to wait for a barely possible decline in prices.

The jobbers are just about getting their fall lines out and it is, therefore, too early to chronicle the attitude of retailers toward higher prices.

Most manufacturers are behindhand on their spring orders and indications point to one of those seasons when it is difficult to get desirable merchandise delivered on time.

A well known manufacturer of infants' hose has recently turned out some new things in this class of goods, among which are infants' plain hose, black and colors, mercerized black and silk face, to retail at 25 cents a pair; infants' ribbed and plain silk hose in black and colors to retail at 50 cents; infants' ribbed mercerized back and silk face in black and colors to retail at 35 cents, and the same style hose in misses' sizes to retail at 50 cents; also a misses' plain tram silk hose in black and colors to retail at 75 cents to $1.00. These are all seamless goods. We reiterate the opinion given by us in former issues that there is room for a big business to be done on infants' silk seamless hose, and we were very favorably impressed with the samples seen of some of the styles just mentioned. We expect to have more to write on this subject later on.

A new garter welt hose has been brought out by Haertel in Germany which has been patented in the United States as well as Germany. It is claimed that this new idea will be a big improvement over the old style and will not tear nearly as readily. It consists of a piece of cloth 1 3/4 inches wide, extending entirely around the stocking and fastened at the bottom 4 1/2 inches from the top of the stocking, though the distance can be changed to accord with different wishes. The garter is to be fastened to this piece of cloth which is not sewed on to the stocking in any way, but knit with the stocking, consequently it is claimed to be as strong as any other part. This piece can be made either in self or contrasting colors and at present is figured to cost 50 to 60 pfennings (12 to 14 cents) over the usual cost of a stocking, though they expect later to put it on for less, when more experience in the making has been obtained. Some very large importers are said to be very well impressed with it and to bespeak a big future for it.

German manufacturers are busy on orders on hand and much delay in time of shipment will be the result of the late date at which orders were placed.

As far as new orders are concerned, it is usually quiet in Germany at this season and this year is no exception.

SWEATER COATS.

Sweater coats for men, women and children have sold exceedingly well for fall delivery and several manufacturers claim to have all the business needed to keep their plants busy for several months to come and jobbers who have been out soliciting business report that the retailers are placing orders freely.

In regard to colors for ladies' garments, white retains the lead, with cardinal a good second. It is believed that the oxford greys are losing ground. In the better grades there is some call for solid colors, such as Alice blue, old rose, reseda and sage. It is noticed that there is a tendency toward the solid colored garments, rather than those made in combinations.

As to length, the coats running 27 to 29 inches are being taken mostly, and although some long coats are being bought for delivery during the summer months, the indications are that the shorter ones will have the call for fall delivery.

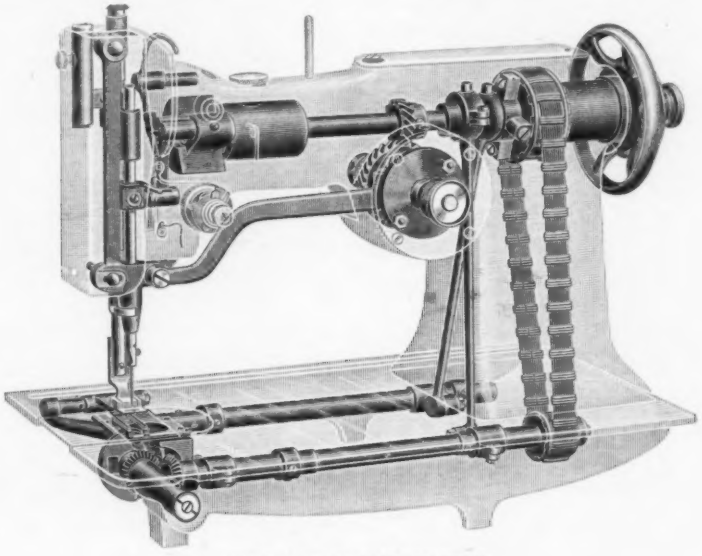
The Wisconsin manufacturers of high grade coats are showing some very attractive styles. The writer had the opportunity of seeing ladies' coats copied from French models on which the better class of retail trade are placing orders. The line in question consisted of several new stitched, imitating Swiss hand knit work in 27, 30 and 36 inch lengths and in a large range of high colors, running in price from $40 to $120 per dozen. The same manufacturer also showed some Russian models of long coats, —one in particular made with loops and buttons, so it could be either worn with revers turned back and buttoned, or doubled over forming a double breasted garment. These were made in fine Saxony wools and are intended to retail at $25 to $35 apiece.

Another article in the fancy knit goods department that has attracted considerable attention is the line of wood silk scarfs. These are made principally by Cleveland and Toledo manufacturers and are shown in a wide range of high colors and fancy stitches at from $4.00 per dozen and upwards. Some are made with gilt or silver tinsel stripes and some of the higher priced lines are embroidered with real silk.

The Ohio Knitting Works, of Toledo, are showing a novelty in the shape of a motor hood made of artificial silk at $21.00 per dozen. This article has been featured by some of the ladies' fashion magazines and we are told it is meeting with a ready sale.

SINGER OVERSEAMING AND ZIGZAG STITCHING MACHINE.

This rotary motion, high speed, lock-stitch sewing machine adapted for overseaming and zigzag or straight stitching, is manufactured by the Singer Sewing Machine Co., Singer Bldg., New York. It is known as the No. 107 W. The rotary system of construction is extended to driving the needle bar frame pitman, thus assuring durability at higher speed than it is possible to drive other overseaming or zigzag machines. The bed is 15 3/8 inches long, and 8 inches from needle to base of arm. The needle bar is set in a frame hinged at the top and given lateral vibratory motion or throw across the



THE NO. 107-W SINGER MACHINE.

line of feed by the eccentrically driven pitman. After each movement of the feed a stitch is formed at the end of each throw, causing the stitches to appear in zigzag formation, or an overseaming can be made if one stitch is taken on the material and the other over its edge.

The hook is driven transversely across the line of the feed, back of the needle and through its thread loop. Two rotations of the hook are made for each thread loop formed by the needle, giving it a smooth, even and continuous rotary motion, conducive to large production and durability.

The length of stitch or feed is regulated by turning the feed regulating spindle head at the right of the balance wheel, and the width of throw or bight of stitch is regulated by turning and regulating the spindle head on the front side of the arm. The extreme width of throw or bight is 7/32 of an inch.

The variety of uses to which the machine can be successfully applied is very great. It can be operated at speed of 2,500 stitches per minute. It is particularly well adapted for sewing knit goods, such as applying the patch to the seat of men's drawers and similar operations where a lock-stitch is essential.

CHANGING A MILL FROM TWO PIECE TO UNION SUITS.

BY MADISON.

A manufacturer who is making underwear in two-piece garments recently asked my advice in regard to changing to union suits and I told him that in the first place he should investigate more closely the difference between the profits. I doubt if any of the manufacturers of union suits today are making any more money on a dozen pair of shirts and drawers, whereas they should get double, as one suit really represents a shirt and drawers.

In cutting suits the waste is bound to be more as it requires a strip of cloth nearly the length that a shirt or drawers would take, consequently the cutter cannot work to as good advantage in turning out holes, etc. Then again the seconds will double up, for when a second is made in the shirt end of the suit, the drawers end must also go for a second. The same naturally will happen if the drawers end of the suit gets spoiled, whereas in the two-piece garments only the shirt or drawers becomes a second, as the case may be.

In the different operations throughout the mill the seconds will also be greater owing to the bulky character of the double garment, as it is difficult for the operators to keep the goods from catching in the machines or dragging on the floor and getting soiled. The greatest care must be taken to keep the floors and tables clean, and the machines and shafting free from oil.

Every garment must be folded separately as soon as that particular garment is finished. By folding each garment in three folds with the legs on the inside and then tying a dozen suits up firmly there is little danger of trouble. The cutting and seaming is the most important operation and great care must be taken to have the cutter work accurately according to the patterns, and still greater care must be taken to see that the seamers put the garments together properly. The finish of the garment is on exactly the same principle as shirt finishing. The stay and facing on a shirt will run about ten inches long while that of a union suit will run close to thirty inches. Naturally this additional length requires much more skill and greater care in order to have a perfect garment. The other operations differ very little from the two-piece suits and the operators should not require any extra training outside of being taught to handle the extra bulk without getting the garments dirty or caught in the machines.

The importation of raw wool into Russia, principally from Australia, rose from $5,879,000 in 1908 to $9,134,500 in 1909.

In 1905 the yearly wages of 1,097,090 operatives in 21,650 textile mills in Germany amounted to $192,297,292, which is equivalent to 58 cents per day for each operative. On the other hand the 739,239 operatives in 4,563 textile mills in the United States received $249,357,277, which is equivalent to $1.12 per day for each operative.

KNITTING NECKTIES.

BY LARAMIE.

Knit ties of pure silk and silk and mercerized cotton are very popular. They are made in a large number of very attractive designs and effects and of any color that one would desire. Another good point in their favor is that they are made so as to slip easily through the turned down collar. They keep their shape after they are tied up as well as, if not better than, any other silk tie.

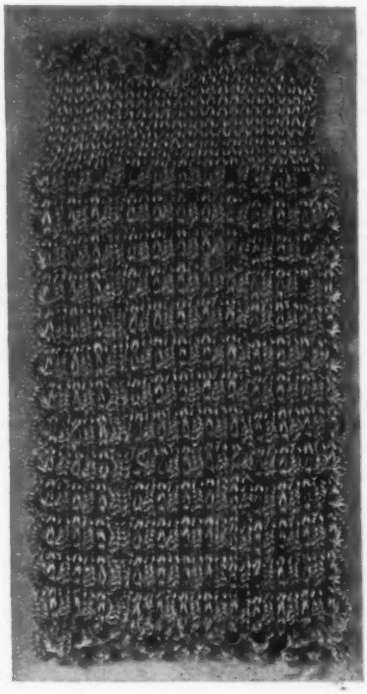


FIG. 1.

Tie knitting is being taken up by many manufacturers who never have had anything to do with knitting machinery of any kind. These ties cannot be made in an ordinary hosiery or underwear mill as it would entail quite an expense to purchase special machinery such as is adapted to the handling of silk, dyeing and winding. Owing to the variety of colors used knitted ties are more profitably made by such manufacturing firms as are using silk yarn all the time.

These ties are knit on latch needle machines of ten, twelve or fourteen gauge and with 1 1/2 to 2 1/4 inch cylinders. Although the patterns are complicated and silk yarns are difficult to run, any knitter who has made hosiery or underwear would have very little difficulty in making good at the tie knitting business. Fig. 1 shows an ordinary plain knit tie made with needles so arranged as to have a long latch needle alternate with a short latch needle. The long latch needles hold the stitches for a certain number of revolutions before casting off. This continues for any desired length, after which the machine changes automatically to a plain knitted fabric for the neck band of the tie, shown in the illustration. After the plain knitting is made the required length, the machine again changes automatically to make the long end of the tie the length required. It will then change to plain knitting,

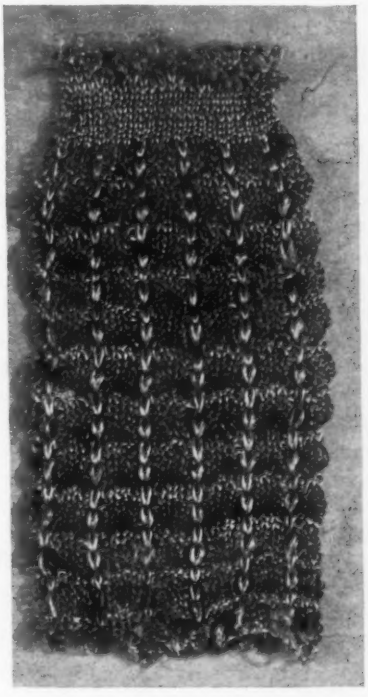


FIG. 2.

making a space of three inches to separate the ties.

A machine will produce 10 to 12 dozen ties in 10 hours. Fig. 2 shows a tie made by having three short latch needles alternate with one long latch needle, using any two colors desired, such as black and white, old rose and green, garnet and white, etc. The long latch needles will hold the stitch for as many revolutions as required before casting off. When the required length is knit it will make the plain knitted fabric in one color only, and will change again automatically, knitting the two colors until the tie is finished.

A SYSTEM FOR A HOSIERY FINISHING ROOM.

BY LENARK.

The amount of help required in a mill having a daily output of 1,000 dozen will depend largely upon the class of work. If the mill is run on ladies' string work or plain knit hose, it will not require as much help as it would if making all transfer or ribbed goods. In most mills having a capacity of 1,000 dozen it is usually necessary to manufacture a full line of hosiery comprising children's ribbed hose, men's half hose, ladies' fine ribbed hose and ladies' plain knit hose. They are usually run in about the following proportion: Children's ribbed goods, 400 dozen per day; men's half hose, 300 dozen per day; ladies' plain knit hose, 200 dozen per day; ladies' fine ribbed hose, 100 dozen per day. These proportions must not be taken as absolutely correct in every case, but they will be found to be about the proportions in mills making a complete line. It is necessary to apportion the production among the different grades in order to show the relative amount of help required for the various kinds of work. To show the amount of help required in the knitting department I shall take each line of work separately as follows:

Children's ribbed goods, 400 dozen per day, each operator to operate 16 machines:

Ribber operators	3
Pick on girls or toppers	35
Transfer machine operators	10
Total	48

Men's half hose, 300 dozen per day:

Ribber operators	1
Pick on girls	15
Transfer girls	8
Total	24

Ladies' plain knit hose, 200 dozen per day:

Machine operators	3
Cutter girls	1
Total	4

Ladies' fine ribbed hose, 100 dozen per day:

Ribber operator	1
Pick on girls	8
Transfer girls	3
Total	12

In addition to the above the following help is necessary in the knitting department:

Boss knitter	1
Ribber fixer	1
Machine fixers	3
Machine helpers	2
Timekeeper	1
Boy to give out work	1
Boy to take up work	1
Total	10

This makes a grand total of 98 for the knitting department.

We now pass to the looping department. The help here will depend largely upon the gauge of the work. I will base my estimate here as I did in the knitting department, and the figures given will be on the general average of work. Thus we find the help to be as follows:

Looper girls (each girl to loop 25 dozen per day)	40
Looper fixer	1
Foreman and timekeeper	1
Turner boys (goods to be turned 3 times)	8
Hemmers	2
Inspectors and menders	25

Boy to give out and take up work	1
Total	78
The dyeing and pressing department:	
Boss dyer and helper	2
Help in dye house	6
Turner boys	5
Dry hands	12
Press hands	5
Total	30
The finishing department:	
Maters	25
Stampers	5
Ticketers	2
Folders	4
Tieing	4
Boxing	2
Foreman and timekeeper	1
Boy to take up work	1
Total	44

In addition to the above we also have a shipping clerk, 3 packers, an engineer and an assistant engineer, 2 firemen and 2 freight handlers, etc., which would bring the total amount of help required in a mill with an output of 1,000 dozen per day and manufacturing a complete line of hosiery, up to about 260 employes.

I have found the serial number system to be the most satisfactory for keeping time in a finishing room. In order to use this system successfully it is necessary to use it throughout the entire mill. The system not only simplifies the keeping of the time in the different departments, but also aids materially in keeping account of the goods as they pass through the mill from one department to another, and also the amount of finished stock on hand. With this system we use a serial number tag, shown at Fig. 1. Each tag has a serial number starting with 1. It will be noticed that the tag is perforated in as many different places as there are departments in the mill. In using this system the work is tied up in 5 dozen bundles and a serial number placed on each bundle. In the knitting department each topper and machine operator has an individual time book which is in the care of the timekeeper of the department. Twice each day the timekeeper goes to each topper or pick on girl and marks down the number of dozen she has in her time book, giving her the serial number tags she needs, also topper's and knitter's numbers, marking the style and size on all the coupons of the tag. He also marks on a separate sheet the serial number of the tags given out with the style and size opposite each number as follows:

202, style 32, size 7
203, style 32, size 7
204, style 29, size 8
205, style 29, size 8
206, style 40, size 9
207, style 50, size 9½

When this sheet is completed it is a list of the amount of goods manufactured in the knitting department for each day. These sheets must be dated and given to the stockkeeper in the main office. After the timekeeper has finished marking up the time books and tags he gives a list of tags given out to the boy who takes up the work. He must check off the numbers, tying the work up in 5 dozen bundles with a tag on each bundle.

The work is then passed to the looping department. The department timekeeper posts the time from the individual time books into the regular department time book, and turns the serial number production sheet over to the stock keeper. After the goods are sent into the looping department they are given out to the loopers in 5 dozen bundles, each with the tag on. Here, as in the knitting department, each looper must have an individual time book. The timekeeper takes up the work twice a day. As he does so he tears off the first coupon on the serial number tag which is marked L. He then gives the looper credit for the number of coupons he tears off, each coupon representing 5 dozen. He must retain each of these coupons and turn them over to the stockkeeper, who in turn checks them off the list which was handed in from the knitting department. This enables the stock-

keeper to tell just what goods have passed through the looping department to the dyeing department, and also just what goods are still in the looping department. The timekeeper of the looping department then posts his time books to the department time book, as in the knitting department.

The goods are then passed to the dyeing department. Here we find it necessary to remove the tags from the goods while undergoing the dyeing process. They must, however, be restored to the goods after dyeing. In order to do this we find it necessary to number the different batches. The dyer in making up a batch will remove the tags from the bundles and tear off the coupon marked D. These coupons are turned over to the stock keeper, who checks them off on his list, thereby showing what goods are dyed and how many remain to be dyed. The tags are then placed in an envelope on which is marked the number of the batch, the number of dozen in the batch, style and size. This envelope is then placed on file in a cabinet for that purpose. A metal tag bearing the batch number is tied to the truck and allowed to follow the batch through the dyeing department. After the goods are dyed and ready to be sent into the boarding room, the metal tag is taken off and the envelope containing the original tags is placed with the batch. The goods are then boarded and dried, and the boarders are given credit for as many dozen as the tags designate. The goods are then turned over to the pressers, and after they are pressed the coupons marked, P, are torn off and given to the stock keeper to check up as before. Each boarder and press hand has an individual time book the same as in the other departments, and they are given credit for as many dozen as their tags indicate. The time is then posted into the department time book by the timekeeper.

From the press room the goods are sent into the mating room, usually on racks. Each batch is sent into the mating room from the press room just as it comes from the dye house with the serial number tags intact. Owing to the many operations which the goods must pass through in the mating department the system of keeping the time of the operators is a little different from that of the other departments. As the goods come into the mating room from the press room they are placed in the stock room of the mating department. It is necessary in this department to have a number of boys whose duty it is to give out the work to the maters, and to pass it on from the maters to the stampers. The number of boys required will depend upon the production of the mill. Each mater or other employe has an individual time book the same as in the other departments. When the boy giving out the work gives the mater a rack of work he counts the number of tickets which accompany the goods and marks the number of dozen, style and size in a small pass book which he carries with him. When the girl has mated this rack of goods he again counts the tickets and marks the number of dozen, also style and size, in her own book and checks them off on his book.

He then gives her another rack of goods and passes the rack she has finished to the stampers. Here he marks up the stamper's time as he did for the maters, counting the tickets and marking the number of dozen in his book. When she has the rack of goods all stamped he recounts the tickets, checks off his book and marks up her time in her own book. This method is followed all through the department, from the stampers to the ticketers, from the ticketing machines to the folders and from the folders to the girls who put the goods in the boxes. The original tickets always go with the goods.

At the close of the day each of the boys who give out the work must leave their books with the department timekeeper. On the following day the boys use another set of books like the first set, and the timekeeper takes the books which were used the day before and checks up each individual time book, after which he posts the time into the regular department time book. In this way it is impossible to make any mistakes, as the boys' books and the individual time books must check up each day.

After the goods are boxed and ready to go to the finished stock room, the original

tickets are turned over to the stockkeeper to check up his books.

Fig. 2 shows a very simple form for keeping track of the goods as they pass through the mill. It consists of a stock book made especially for the purpose, with the serial numbers stamped on the margin to correspond with the numbers on tags.

When the production sheet from the knitting department is handed to the stock keeper, it is posted into the stock book, with the date entered in the column marked "knit," which will show the number of dozen, style, size and the date they were knit. When the coupons from the looping department are sent in, the date is stamped under the column marked "looped" and opposite the serial number corresponding to number on the coupons. This process is carried out until the goods are checked into the finished stock warehouse, when they are transferred to the finished stock account.

The advantages of this system is that it greatly simplifies the time keeping. It is much easier to count the work in 5 dozen bundles than by the single dozen. It also enables the stock keeper to keep a check on all the goods as they pass through the mill and to tell exactly what goods are in each department at any time. It also shows the exact production of each department from day to day, enabling the superintendent to keep the different departments well balanced at all times. The stock keeper should make out a report each day for the superintendent, showing the exact production of each department.

Practically all the cotton consumed in the Mexican mills in the last few years has been home grown. The value of cotton goods imported amounted to $4,644,602, compared with $6,904,893 in 1907.

The total consumption in 1908-09 of cotton by the mills of the United States, Europe, India and Japan was equal to 16,585,000 bales (of 500 pounds net weight), being the largest consumption ever recorded except that for the season of 1906-07, when the total was 16,643,000 bales.

KNITTING MILL NEWS.

New Mills.

Georgia, Dallas. A charter has been granted the Euharlee Hosiery Mills with authorized capital stock of $10,000. W. A. Foster and W. E. Spinks are the incorporators.

*Georgia, Douglasville. The Douglasville Knitting Mill is remodeling an old building and installing steam power equipment, with 25 h. p. capacity, ten knitting machines, etc. The number of knitting machines will be increased within a short time. J. T. Duncan is president.

Minnesota, St. Paul. J. Weis, 700 St. Peter St., will manufacture a line of ribbed, seamless ankle warmers. The project is not far enough advanced to give further particulars.

*New York, Fulton. The Progress Knitting Mills Co. has been granted a charter with capital stock of $125,000. They will manufacture knit underwear. The officers are W. H. Spanswick, president and manager; F. E. Fairchild, vice president and superintendent; C. A. Larned, treasurer, and F. W. Richardson, secretary. They are at present negotiating for a location and, undoubtedly, arrangements will be made to locate in Fulton. Mr. Spanswick has been manager of the Monarch Knitting Mills of this place for the past three years. The new concern will have equipment of 30 knitting machines and 50 sewing machines, producing about 600 dozen garments daily. They propose to bleach and finish and operate the plant by electric power.

North Carolina, Durham. The Durham Textile Mills have been incorporated with authorized capital stock of $50,000 and have organized with A. M. Moore, president; E. R. Merrick, vice-president; C. C. Spalding, treasurer, and Charles C. Amey, secretary and general manager. The second floor of a building here has been leased and 10 knitting machines, 2 loopers and 2 ribbers will be installed. Hosiery will be manufactured and sold in gray. The equipment will be increased later.

*North Carolina, High Point. The building for the Piedmont Mills Co. has been completed and the installation of 150 hosiery machines is now taking place. There is room for 600 machines and more will be added as soon as the plant is running in good shape. Both men's and women's hosiery will be made.

*North Carolina, Robersonville. The Robersonville Hosiery & Mfg. Co., recently incorporated with authorized capital stock of $100,000, will start business with $20,000 paid in. Early in the spring buildings will be erected and equipped for manufacturing hosiery. A meeting of stockholders will be held shortly for organization and election of officers.

Ohio, Cleveland. The Weisenberg-Guggenheim Co., recently incorporated with capital stock of $10,000, has established an office and factory at 224 High Ave. Twelve knitting machines have been installed for making knit neckties. They propose to sell direct. Herman Guggenheim is president; Ed. J. Weisenberg, treasurer and buyer

Pennsylvania, Easton. Several weeks ago it was rumored that a new knitting mill would be located in either Easton or Phillipsburg, N. J. It has been decided to locate in Easton and about March 1 construction work will be started on a mill. The new company will be known as the Easton Knitting Mills Co., and plans to make men's, women's and infants' hosiery on initial equipment of 74 knitting machines to be operated by steam and electric power. The capital stock is $10,000. A. J. Bowers is president, O. Paul Kaffke, secretary, manager and buyer, and Harvey Shantz, superintendent. All communications should be addressed to Mr. Kaffke, 15 North Third St.

Enlargements and Improvements.

California, Los Angeles. The Pioneer Hosiery Mills contemplate the erection of a mill to which the present plant will be removed and greatly enlarged. We noted some time ago that this company is interested in the location of a cotton yarn mill in this section.

*Connecticut, Manchester Green. It is unlikely that the Glastonbury Co. will build the proposed addition this year. They have decided on a 2-story mill, 50 by 150 ft., which will nearly double the present capacity, but have not decided the exact time for building. The main office and mill is at Addison, Conn.

Connecticut, Winsted. In order to afford better facilities for packing, finishing and shipping, the Winsted Hosiery Co. is building an addition, 32 by 90 ft., 4 stories high, of brick construction. There will be no increase in capacity.

*Maine, Brunswick. Following the incorporation of the business of the Brunswick Knitting Mill, it has been decided to add about 20 knitting machines, giving total equipment of 50 machines. The capital stock is $20,000. T. C. Hunton is president and buyer. J. P. Winchell is treasurer. They manufacture hosiery exclusively, buying 10s, 11s and 40s cotton yarn on cones and 2/28s mercerized.

Massachusetts, South Hingham. Stockholders of the Hingham Knitting Co. have voted to increase the capital stock from $12,000 to $18,000, and it is expected the equipment will be increased.

*Massachusetts, Waltham. Permit has been secured to build the proposed addition for the American Knitting Co. A concrete structure, 2 stories high, 95 by 44 ft., will be built, to cost about $5,000. Charles F. Stone, ex-mayor of Waltham, will build the mill. Mr. Stone owns the buildings now occupied by the American Knitting Co. It has been rumored that spinning machinery would be installed in the new building, but Mr. Tomlin, president of the American Knitting Co., has not given out information as to what new equipment will be required.

*Michigan, Bay City. The new building to be erected for the underwear department of the World's Star Knitting Co. will be 5 stories high, 190 by 50 ft. A 1-story dye house also will be constructed, 20 by 80 ft. As noted previously, the new equipment will consist of 45 knitting machines and 75 sewing machines for making men's, women's and children's underwear. The capital stock has been increased from $200,000 to $250,000.

*Michigan, Grand Rapids. The Globe Knitting Works propose to build a 5-story mill, 50 by 103 ft., on the property adjoining their plant, recently purchased. It has not been decided as yet when they will build.

*New Hampshire, Laconia. About 1,350 square feet has been added to the manufacturing space of Wm. Clow & Son.

New Jersey, Dover. Contract has been awarded by the Swiss Knitting Co. for a large brick addition. They manufacture ladies' ribbed underwear in silk mixes, wool and cotton. E. G. Kattermann & Co. are the proprietors.

New York, Cohoes. The old Riverside Mill building, including machinery, has been bought by Nathan Hatch, Jacob Friedman and David Fuld of Albany, and they have leased it to the Fitwell Knitting Co. who will continue to operate the plant as heretofore. They are adding machinery to make about 250 dozen men's ribbed underwear per day, a line of men's and women's worsted sweaters and a line of flat worsted underwear, besides their regular line of flat woolen goods. Within a short time new machinery will be required in addition to that already purchased. Nathan Hatch is president, and Walter Buck, secretary.

*New York, Watertown. Bids are being received for the construction of the new factory building for the Shaughnessy Knitting Co.

New York, Waterville. The Oneida Hosiery Co. has increased its capital stock from $100,000 to $250,000, and larger quarters have been leased at Second St. and Alleghany Ave., Philadelphia.

*North Carolina, Burlington. From 20 to 40 200-needle hosiery machines will be installed in the addition being built for the Whitehead Hosiery Mill, Inc., which will give them total equipment of 100 knitting machines and 20 loopers. The capital stock has been increased from $16,000 to $22,000. R. H. Whitehead is treasurer and buyer.

*North Carolina, Flat Rock. The new mill to be built by the Skyland Hosiery Co. to replace the finishing department, burned some time ago, will be of brick construction and including equipment will cost $15,000. Contract for finishing and dyeing equipment has been awarded. Eighty additional hosiery machines are also being installed.

*Ohio, Columbus. As soon as the hosiery department at the State Penitentiary is in good running order a knit underwear department will be established.

Ohio, Elyria. The capacity of the Fay Stocking Co. has been increased by the erection of new buildings for offices and shipping department, enabling the whole of the former building to be used for manufacturing. Men's, women's and children's hosiery is manufactured. It is planned to further extend the line of half hose.

Dyeing, Bleaching, Printing, Etc.

INDANTHRENE COLORS.

In the history of the development and manufacture of dyestuffs, no product ranks higher in importance, considering the ultimate consumer, than Indanthrene, an invention of the B. A. S. F.

There has been a feeling of distrust in the public mind against "Aniline" colors or artificial dyestuffs caused by the use of substantive and basic colors for cotton. It was hoped that Sulphur colors would promote confidence in the use of "Aniline" products. These, however, while giving greater satisfaction under certain conditions, have in many cases disappointed the users.

It has remained for the Indanthrene series of the B. A. S. F. to demonstrate that permanence of color without injury to the fabric is possible with this class of artificial dyestuffs. The manufacturers of high-class cotton fabrics have found Indanthrenes to satisfy the requirements of the trade. From this starting point a decade ago, a most remarkable series of colors has been developed. Although the complete range of shades is not perfected, a large variety of colors demanded by the trade is available.

The Indanthrene Colors have the property of combining with the cotton fiber, when applied correctly, in such a manner as to show the greatest resistance to light, washing and many other influences which are of the utmost importance to the manufacturer and consumer.

It has been noticed that cotton fibers dyed with Indanthrene become stronger, owing to the character of the dyeing process, a very marked difference in strength over the fiber dyed with basic colors, substantive colors, sulphur colors, etc.; Indigo being the only other dyestuff which acts in a similar manner.

This series comprises at present the following:

Blues from greenish to violet shades and various Navy Blues.

Indanthrene Blue R S is the oldest representative and is the product which gave the group its name. Indanthrene Blue R S excels in fastness to light and washing any dyestuff known. It is affected by chlorine more than some of the others, but like most Indanthrenes is not destroyed by short treatment with chlorine. Any change is immediately overcome by subsequent treatment with a little Hydrosulphite solution.

Indanthrene Blue R C is practically identical to R S in shade. It withstands severe treatment with chlorine, as does also the Blue G C and G C D.

The Indanthrene Violets R T, R Extra and R R Extra give violets ranging from dull bluish to the most brilliant violet, all of which, in addition to usual fastness properties, are of excellent fastness to chlorine.

Indanthrene Dark Blue B O and Indanthrene Dark Blue B T Double are colors which can be used for heavy shades, the former color alone or in combination with the other Blues, as circumstances require.

Indanthrene Yellow G, Yellow R, Golden Orange G, Orange R T and Copper R are all easily workable and level dyeing colors, the range of temperature being greater with these than usual.

Indanthrene Grey B is a level dyeing color suitable for warps and raw stock.

Indanthrene Brown B and Maroon R find good application for special brown shades.

Olive G gives a good greenish olive, and is level dyeing, but not fast to Chlorine. Indanthrene Green finds good application as a bluish, dull green.

Indanthrene Red R. Indanthrene Red G, Indanthrene Claret B and Indanthrene Claret B Extra, are a series of brick reds and bordeaux not largely used as self colors, but they dye easily in raw stock, cops or cheeses, in circulating machine, and are all of excellent general fastness, including Chlorine.

Indanthrene Black B is of special use for goods which are bleached in the finishing

process, either with Peroxide of Sodium or Chlorine.

The Indanthrene Series now comprises more than twenty colors of vital importance to the cotton trade. A few years ago it was an impossibility to buy a piece of cotton goods of a light shade, say of Blue, Violet, Grey or Tan, that would withstand a short exposure to sunlight or a severe washing. Today it is possible to buy many goods dyed with Indanthrene Colors at the same price for which greatly inferior goods are selling. The Indanthrene colors are principally suitable for use on cotton and linen and other vegetable fibers. Eventually, there is no doubt but that its use will extend to many of the animal fibers, silk, wool, etc.

In working for methods of application which could be successfully carried out for commercial use, many difficulties appeared. Indanthrene evidently had no relation in application to any of the known dyestuffs, except indigo, and to that widely-known color only to a small degree. Indanthrene responds to the action of alkaline reducing agents only at certain temperatures in a way which renders them subsequently useful. Whereas indigo can be reduced for subsequent use at almost any temperature between freezing and boiling and with a large variety of reducing agents, Indanthrene dyes well only between narrow limits of specified temperatures and with but few reducing agents. The most successful and largely used reducing agents employed are Hydrosulphite B A S F in an alkaline solution of Caustic Soda. With these reducing agents employed in proportions suitable for various requirements, many mills now dye many of their shades on cotton with Indanthrene colors.

Yarn dyeing is successfully carried out on warps, skeins, cops, spools, etc. In fact, these colors seem to be very well suited to most of the types of circulating machine designed for yarn. The Scotch systems and box machine dyeing are extensively used for Indanthrene colors.

Raw stock is, as a rule, dyed in a pressure circulating type of machine as for instance the Vacuum dyeing machine, Delahunty circulating machine, Obermaier machine, etc.

The problem of dyeing piece goods has, in a certain measure, been solved, so that especially on the lighter shades, goods of a fastness hitherto unknown to the cotton trade are now being successfully turned out by a simple and easy process.

For printing, the use of the vat colors is increasing. For Indanthrenes, two different processes are recommended; one method is to print the dyestuff with a printing paste containing Sulphate of Iron and Tin Salt and develop in a bath of Caustic Soda, or a printing paste with the addition of Oxydule of Tin or Rongalite C may be used; in this case the goods must be steamed after printing. The steaming has to be done in a steamer free from air and an ample supply of steam is necessary. If the agers generally used are changed in this way perfect results are obtained with Indanthrene colors.

The Special Indanthrene Blues have been found to excel for correcting the white of bleached cotton and finds large application in sizing in many bleacheries. Used as a bluing, it has the special advantage of not decomposing in storage and does not yellow, as do most of the bluings hitherto used.

No concern can give a higher recommendation as to the staying qualities of the colors in their cotton goods than to say, "They Are Dyed With Indanthrenes."

SINGEING WOOL GOODS.

(*From the Dyer and Calico Printer.*)
(Continued from June.)

Fig. 9 illustrates how the passage of the strained cloth over an acute angle causes each individual hair to project. This is one of the best methods of presenting the fabric to the jet, but unfortunately, very acute angles put a great strain on to the traveling cloth, and increase the difficulty of drawing it through the machine. Fig. 8 represents the fabric traveling around the circumference of a metal cylinder, the gas jet for singeing the cloth impinging on to the strained material as shown. This method is recommended for very thin cloths which are sometimes creased

by laying, the strain of which round the drum's face flattens out all folds, and presents an even surface to the flame. Fig. 10 is given to show the construction and hollow form of a single jet; the shaded portion represents the interior, and within this the singeing action is nil, the only portion where the fibers are attacked being on the fringe of the flame at BB.

Plate singes, which are extensively used in cotton finishing, are not applicable to wool cloths. This is partly due to the low inflammability of wool, and the bulky ash formed from burnt wool which sticks to the surface, and is not driven off like that of cotton. Hand singeing is occasionally applied to the list of fabrics to remove the spreading hairs which have a most unsightly appearance with some goods. In this case it is most readily done during the time the cloth is screwed down in the cramp or cold flat, when, the selvages being all together, the hairs are easily removed by applying a flame.

Burnt wool gives off a peculiarly strong odor which is not easy to remove unless the cloth is boiled, and singeing when used for worsteds should always be done amongst the initial processes, so that the boiling and steaming follow it. Over-singed places are less common in treating worsteds than in cottons, as it takes more time and heat to burn through the surface threads; when this fault, however, does appear, the cloth is practically done for, and presents something like the section shown at Fig. 11, where the top half of the thread is destroyed. Owing to the poor heat-conducting properties of wool, it will stand a fair amount of contact with a flame.

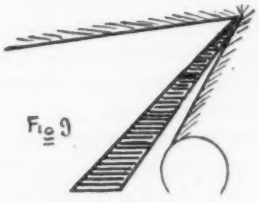


Fig. 9

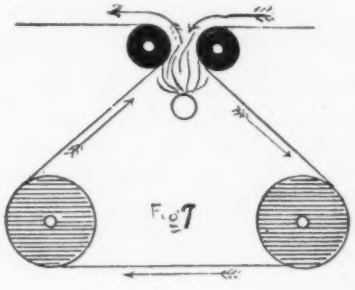


Fig. 7

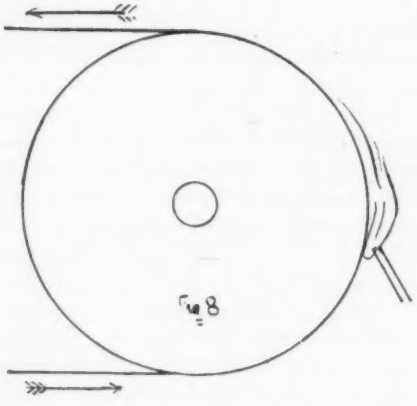


Fig. 8

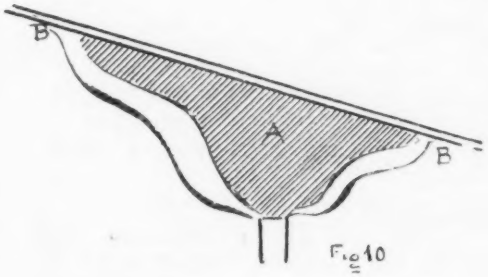


Fig. 10

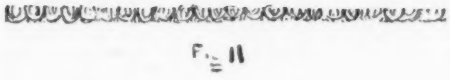


Fig. 11

Waterproofing Gabardine Cloth.

Editor Textile World Record:

I noticed in your January issue, page 521, something about gabardines. In the last paragraph you state that they are rainproofed by the Millerain process. Can you give me any information about this process? Is it done in this country, and if so, by whom? I enclose a small swatch of a gabardine cloth, which weighs about 5 1/2 ounces to the yard, 28 1/2 inches wide, or 6 8/10 ounces to the square yard, and has a tensile strength of 100 pounds to the inch in the warp and 90 in the filling. Can you tell me whether it is made in this country? If so, by whom it is made, and if not made in this country, do you know of any mill that would probably be able to make a similar cloth? Thompson (1161).

We do not know of any American manufacturers making goods like sample, which is similar to the fabric described in our October, 1908, issue, the construction of which was as follows:

Weight, 5.2 ounces per yard, 28 inch.

Warp, 128 ends olive khaki twist per inch 2/56s.

Filling, 87 picks single khaki, 1/17s.

Weave, 4 leaf twill, 2 up and 2 down.

(The sizes are for the yarn as it lies in the cloth without allowance for take-up.)

We sent part of "Thompson's" samples to a manufacturer who is interested in the inquiry. Our English correspondent, to whom the question was submitted, reports as follows:

The pattern "Thompson" encloses is a good cotton drill with a green and khaki grandrelle warp and self-colored khaki filling. It corresponds closely to some goods made by Langworthy Bros. & Co., Manchester, for British official requirements. Other Manchester firms producing similar goods are John Bentley & Co., Rd. Haworth & Co., Joshua Hoyle & Co., E. Spinner & Co., Sir Elkanah Armitage & Sons. The strength requirements are stringent, but can probably be met by United States firms.

With respect to the Millerain process: This is worked in England and Germany, but not in the United States, although I believe that American negotiations are pending. It is one of the two chief and original waterproofing processes employed in this country. The other is the Cravenette, which in England is worked by the Bradford Dyers' Association and in America by a concessionaire. It is safe to say that these two concerns treat much more material than all others combined. Technically the Millerain process follows the outlines given in reply to "Blanket," pages 517 and 518, Textile World Record, January, 1910. The waxes are applied melted. In the original Cravenette process the waxes are applied frictionally while solid.

I am not able to say that the frictional system is still employed by the owners of the Cravenette trademark. On the evidence of men who have tried that arrangement the system presents disadvantages. Slips occur in the passage of the cloth over the wax block and circular cockled patches are formed. Troubles arise from the crystalline natures of different waxes and under friction the separate waxes in a blend tend to crystallize by themselves. The wax block surface then, instead of being homogeneous, presents patches of isolated paraffin, ceresine, carnauba or what not, which are not equal in hardness and do not coat the fabric equally or satisfactorily. These are named as some of the inconveniences experienced in attempting work on the lines of the Cravenette expired patents and not at all in disrespect of the work that the Cravenette Company does by means of its improvements or substitutes. The precise nature of the ingredients used by the principal proofers of gabardines remains a secret and very much depends on the efficient waxing with a compound of high enough melting point. Rainproofing is done chiefly by commission firms, of whom the Cravenette Co., Bradford, and the British Millerain Co., Ltd., Halifax, are the chief. There are others among whom may be named R. N. O., Ltd., Wyke, Bradford, whose process should be described rather as a special finish than as a rainproof finish. The initials represent "Restores Nature's Own," and the treatment is understood to consist of passing cloth through a solution of wax in tetrachloride of carbon. The business seems to be carried on upon rather a small scale. W. H. Hellewell & Co., Ltd., Sowerley Bridge,

Edwin Turner, Ltd., Halifax and M. Nicholson & Co. ("M N C" raincoats), St. Albans, do some proofing and are understood all to use a type of machine made by Knowles, Bradford, in accordance with the Cravenette system to which reference has been made. Jennens, Welch & Co., Ltd., Huddersfield, a firm of London shrinkers, have a process called "Jennevel Garbirnett," and cater to some extent to tailors who want to have coat lengths proofed. As manufacturers of cloths or garments are able to get satisfactory work done by the principal commission proofers at about 3 cents a yard 6/4 they have no particular inducements to lay down a waterproofing plant of their own. Registered names for rainproofs are more numerous than rainproofs in England.

Artemus Argus.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 33.

Blue Black on Cotton Yarn.

Immedial Brilliant Carbon F on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Immedial Brilliant Carbon F.
(Cassella Color Co., 182 Front St., N .Y.)
20 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
30 lbs. Common Salt.

Enter the material at a temperature just below the boil and dye at least 1 hour at this temperature. In a standing bath the dyestuff may be reduced to 6 lbs. per 100 lbs. material.

Immedial Brilliant Carbon F gives a desirable shade of blue black possessing the characteristic fastness of the sulphur colors.

Recipe No. 34.

Red on Cotton Yarn.

Direct Red 8 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Direct Red 8 B.
(C. Bischoff & Co., 451 Washington St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Enter at a temperature just below the boil and dye at a boil for one hour. Direct Red 8 B produces a red of a bluish hue which possesses the characteristic properties of the direct cotton colors.

Recipe No. 35.

Blue on Worsted Yarn.

Alizarine Brilliant Blue 2 R on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Alizarine Brilliant Blue 2 R.
(American Dyewood Co., 84 William St., N. Y.)
10 lbs. Glauber's Salt.
10 lbs. Acetic Acid.

Enter the yarn at 140° F., bring slowly to a boil, and after boiling for 1/2 hour, add

3 lbs. Sulphuric Acid

and boil for 1/2 hour longer to exhaust the bath. Then add

3 lbs. Bichromate of Potash

and continue the boiling for 3/4 of an hour, or until the shade is properly developed.

Alizarine Brilliant Blue 2 R is a rich blue, of exceptional fastness to light and milling. It possesses good solubility and dyes level.

Recipe No. 36.

Yellow Brown on Cotton Yarn.

Direct Yellowish Brown 3 G O Extra on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Direct Yellowish Brown 3 G O Extra.
(C. Bischoff & Co., 451 Washington St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Enter at a temperature just below the boil and dye at a boil for 1 hour. Direct Yellowish Brown 3 G O Extra produces a yellowish shade of brown which possesses the characteristic properties of the direct cotton colors.

Recipe No. 37.

Bright Blue on Cotton Yarn.

Cotton Pure Blue R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Cotton Pure Blue R.
(Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Glauber's Salt Calcined.
2 lbs. Acetic Acid.

Dye at a temperature of 200° F., for 1 hour.

Cotton Pure Blue R possesses extraordinary brilliancy, and possesses good fastness to acids. Alkalies however must be avoided in its use.

Recipe No. 38.

Black on Cotton Yarn.

Thioxine Black B G 000 on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Thioxine Black B G 000.
(Geisenheimer & Co., 189 Front St., N. Y.)
30 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
2½ lbs. Dextrine.
50 lbs. Common Salt.

Enter at 190° F., and dye at a temperature just below the boil for one hour. Squeeze immediately, wash and dry.

Thioxine Black B G 000 dyes extremely level and produces blacks exceedingly fast to light.

Recipe No. 39.

Slate on Worsted Yarn.

Alizarine Fast Slate on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Alizarine Fast Slate.
(American Dyewood Co., 84 William St., N. Y.)
10 lbs. Glauber's Salt.
10 lbs. Acetic Acid.

Enter the yarn at 140° F., bring slowly to a boil and after dyeing for 1/2 hour at a boil, add

2 to 3 lbs. Sulphuric Acid

and boil 1/2 hour longer to exhaust the bath. Then add

8 ozs. Bichromate of Potash

and continue the boiling for 1/2 hour or until the shade is properly developed. Alizarine Fast Slate possesses excellent fastness to light and milling, which combined with its clear bluish tone and level dyeing properties, make it a valuable dyestuff for the production of light shades on all forms of wool material.

Recipe No. 40.

Brown on Worsted Yarn.

Anthracene Chromate Brown E R on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Anthracene Chromate Brown E R.
(Cassella Color Co., 182 Front St., N. Y.)
¾ lbs. Potassium Bichromate.
2 lbs. Magnesium Sulphate.

Enter at 160° F., work at this temperature for 1 hour. Then bring to a boil and dye at a boil for 2 hours.

Anthracene Chromate Brown E R possesses excellent fastness to the ordinary color destroying agencies.

Recipe No. 41.

Brown on Worsted Yarn.

Chrome Brown G P on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Chrome Brown G P.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter the material at 100° F., raise slowly to a boil, and dye at a boiling temperature 1 hour. Then add

5 lbs. Bisulphate of Soda

and boil until the bath is exhausted. Allow the bath to cool to 140° F., and add

3 lbs. Potassium Bichromate

and boil for 1 hour longer.

Chrome Brown G P possesses excellent fastness to light and washing.

Recipe No. 42.

Red on Worsted Yarn.

Naphthol Red 3 G X on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Naphthol Red 3 G X.
(Badische Co., 128 Duane St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for 1 hour. Naphthol Red 3 G X is an extremely level dyeing color, and produces a bright scarlet.

Recipe No. 43.

Gray on Worsted Yarn.

Salicine Drab A on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Salicine Drab A.
(Kalle & Co., 530 Canal St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., bring slowly to a boil and dye at a boil for 3/4 of an hour. Then add

2 lbs. Sulphuric Acid

and boil for 1/2 hour longer. Then add

2 lbs. Potassium Bichromate

and boil for 3/4 of an hour longer.

Salicine Drab A possesses excellent fastness to light, weather, fulling, crabbing, and in fact very good fastness to all of the common color destroying agencies.

Recipe No. 44.

Blue on Cotton Yarn.

Diazo Sky Blue 3 G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazo Sky Blue 3 G.
(Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y.)
20 lbs. Common Salt.
2 lbs. Soda Ash.

Dye at a boil for 1 hour. Then diazotise in a bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid 32° Tw.

Work cold for 20 minutes, then develop in a bath made up with

1½ lbs. Developer A.

Work in this bath at ordinary temperature for 20 minutes. Wash and dry.

Diazo Sky Blue 3 G possesses very good fastness to washing, and its fastness to light is increased somewhat by the developing process.

Recipe No. 45.

Green on Worsted Yarn.

Anthracyl Chrome Green D on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Anthracyl Chrome Green D.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 100° F., raise slowly to a boil and boil for 1 hour. Then add

4 lbs. Bisulphate of Soda

and continue the boiling until the bath clears. Then add

2 lbs. Potassium Bichromate
1½ lbs. Lactic Acid

and continue the boiling for 3/4 of an hour.

Anthracyl Chrome Green D possesses excellent fastness to light and washing.

Recipe No. 46.

Black on Cotton Yarn.

Thioxine Black 4 B N O on 100 lbs. cotton yarn. Prepare the dye bath with

15 lbs. Thioxine Black 4 B N O.
(Geisenheimer & Co., 189 Front St., N. Y.)
45 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
2½ lbs. Dextrine.
50 lbs. Common Salt.

Enter at 180° F., and dye at a temperature just below the boil for 1 hour. Squeeze immediately, wash and dry.

Thioxine Black 4 B N O dyes extremely level and produces blacks exceedingly fast to light.

Recipe No. 47.

Yellow on Cotton Yarn.

Helindone Yellow 3 G N Paste on 100 lbs. cotton yarn. First prepare a stock liquor as follows:

20 lbs. Helindone Yellow 3 G N Paste
(H. A. Metz & Co., 122 Hudson St., N. Y.)

are thinned with 10 gallons of water, then are added

1¼ gals. Caustic Soda Solution 40° Be.
8 lbs. Hydrosulphite M L B Conc. Powder.

The reduction will be indicated by perfect solution and red color, and should be complete in from 1/4 to 1/2 hour, when it is ready for use.

For 100 lbs. of yarn use 250 gallons of water in which has been dissolved 70 lbs. common salt.

Add the above stock solution with thorough stirring.

The yarn is entered on bent sticks, worked for 1/2 hour under the surface of the dye liquor, then evenly wrung out or squeezed. It is then allowed to oxidize in the air for 1/2 hour, and the color is then developed by treating with boiling soap solution for 20 minutes. This treatment with soap is necessary to secure brilliancy of shade and fastness to light.

Helindone Yellow 3 G N Paste possesses excellent fastness to light and washing, and all of the common color destroying agencies. It can be used in conjunction with indigo blues and the production of fast green shades.

Recipe No. 48.

Olive on Wortsed Yarn.

Salicine Olive 2 G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Salicine Olive 2 G.
(Kalle & Co., 530 Canal St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., bring slowly to a boil and dye at a boil for 3/4 of an hour. Then add

2 lbs. Sulphuric Acid

and boil for 1/2 hour longer. Then add

2 lbs. Potassium Bichromate

and boil 3/4 of an hour longer.

Salicine Olive 2 G possesses excellent fastness to light, weather, fulling, crabbing, and in fact very good fastness to all of the common color destroying agencies.

THE LIGHTING OF TEXTILE MILLS.

PART I.

THE VALUE OF CORRECT ILLUMINATION.

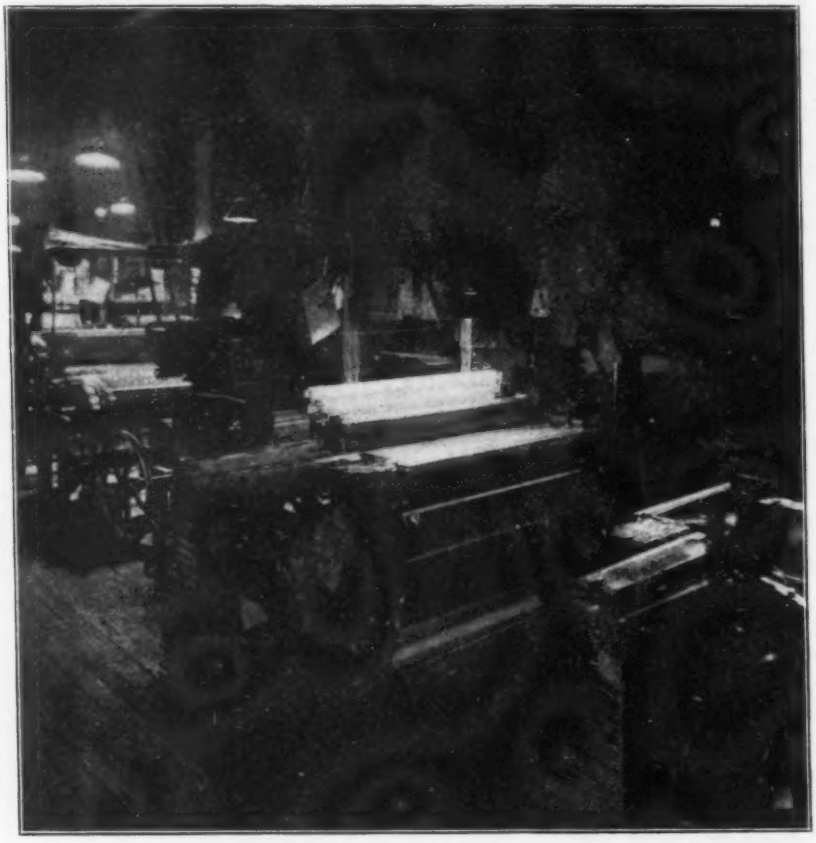
BY W. C. ANDREWS.

This is the first of two articles on the practical aspects of a very important subject and one too little understood by textile men. In his second article, Mr. Andrews will give some technical points which may be applied by any mill superintendent in estimating the cost and value of his incandescent electric lighting equipment.

The personal equation is a big factor in the textile industry. From the carding room to the final inspection, careful and constant scrutiny on the workmen's part is the price of a successful product.

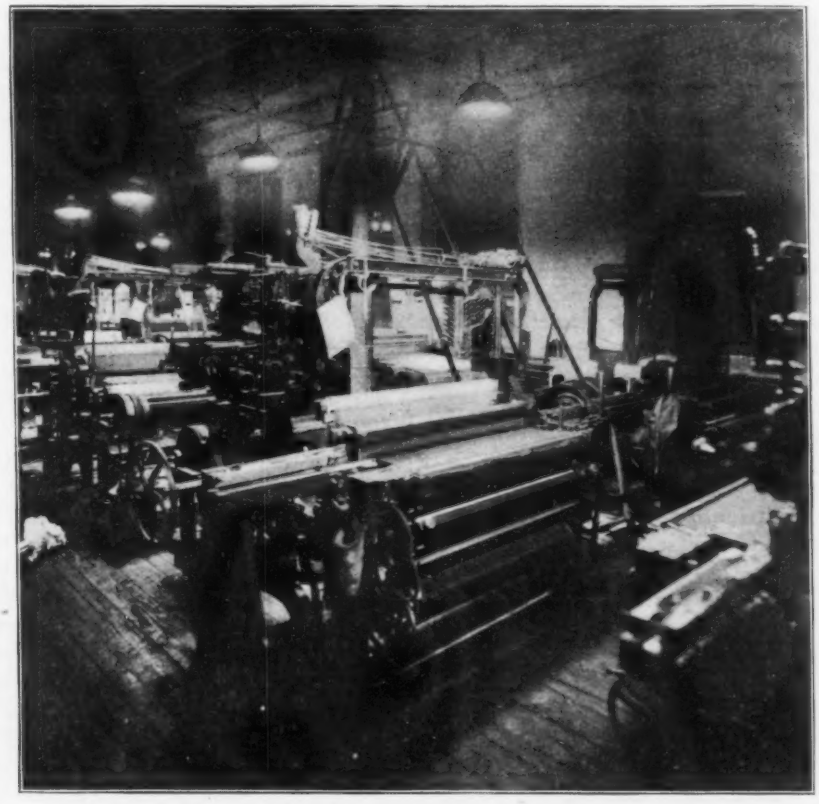
Because correct illumination not only permits but induces greater vigilance during those working hours when eye-fatigue and carelessness are to be expected, it has thereby a very pertinent bearing on both the quality of the output and the economy of its manufacture.

At the loom, where all defects in winding, warping, quilling, twisting, etc., come to the surface and must be rectified, efficient illumination is obviously of the utmost importance, yet inadequate loom lighting is the rule rather than the exception. An example which it will not be difficult to duplicate in a large proportion of loom rooms, is shown in the left hand photograph reproduced on this page. The lighting equipment consisted of ordinary carbon incandescent lamps in tin shades, this combination being perhaps the best substitute for daylight that was available up to a year or two ago. Recently,



NO. 1. THE ORDINARY METHODS OF LIGHTING A LOOM WITH CARBON LAMPS IN COMMON TIN SHADES. THE PHOTOGRAPH WAS EXPOSED THREE TIMES AS LONG AS THE PICTURE ON THE OPPOSITE PAGE.

however, remarkable progress has been made in the science of illumination, both as regards the source of light and its distribution. The second, or right hand picture, shows the improvement made in the lighting of this same loom by substituting up-to-date lamps and reflectors for the old unscientific methods. The application of the same modern principles to other departments of textile work has produced similar improvements in the illumination and has had the logical effect of raising the standard of the product through every step of its manufacture. With this example as a text, it is profitable to preach a little sermon on the advantages of correct illumination in the textile industry.



NO. 2. CORRECT LOOM LIGHTING AS DESIGNED BY THE INDUSTRIAL DEPARTMENT OF THE BUCKEYE ELECTRIC CO. MAZDA LAMPS, SCIENTIFICALLY DESIGNED REFLECTORS AND CORRECT PLACEMENT, MAKE THE DIFFERENCE.

The specific returns on the outlay for well designed lighting systems, is many times the original investment reckoned in dollars and cents for increased and improved production, without considering the supplemental, if less tangible, value of better working conditions.

There is a fixed charge against every loom or piece of machinery used in the process of weaving, which charge, together with the wages of the operator, must be paid off in yardage. Efficient illumination not only prevents defects which mean waste of material, but enables the operator to work more rapidly without eye-fatigue and to lose less time in correcting flaws and errors. In comparing the two illustrations, it is to be noted that in the first one the illumination at the back of the loom is very poor—that where

the threads or ends come from the warp beam and enter the eyes of the heddles of the harnesses, they are in comparative darkness. In the other view (made with an exposure of the camera only one-third as long), this most important section is shown well illuminated. Furthermore, in this second illustration, which shows cloth having black warp and black filling, there is a perfect evenness to the illumination, with an entire absence of the lights and shadows which are so apparent in the work lighted by ordinary tin shades, and every detail of the reeds and harnesses stand out in striking detail.

The weaver depends on the illumination in his continued watch for floats, tight knots, draw backs, broken ends and all other defects that depreciate the value and quality of the finished cloth—his vigilant eye must scan without rest the five to twelve thousand threads, passing through the harnesses. Illumination like that shown in the right hand photograph must secure the detection of many flaws that would otherwise escape observation.

What applies to the looms, applies in a greater or less degree to all machines in the mill. The elimination of defects as the material passes step by step through the preparatory stages, has not alone a beneficial effect on the quantity of work done, but delivers to the loom a much better grade of stock. It is very desirable therefore that the principles of correct illumination be understood by the managements of textile establishments and those who are responsible for the amount and character of the product.

BANDS IN A RING SPINNING ROOM.

BY WINTON.

Many spinners make a serious mistake in not calculating the speed of the spindles properly. Take for example an eight-inch drum or cylinder and a one-inch whorl. At the first glance one would think that the spindles revolve eight times to the cylinder's once, but this is not the case. Owing to its thickness the band does not lie at the base of the groove, where it is one inch in diameter, and the spindle will not, therefore, make eight revolutions to the cylinder's one. The smaller the band the deeper it will penetrate the V-shaped groove in the whorl, and the faster will the spindle run. The groovers are made V-shaped instead of U-shape in order that the band can press between the V, get tight in the groove and turn the spindle. All rope drives have a V-shaped pulley or sheave and U-shaped idlers.

If different sized bands are used the spindles will not run at the same speed and in that case the yarn will not receive the same twist. The result of one thread being twisted harder than another is easily seen in the cloth, where the threads lie side by side. To find the exact relation between the spindle and cylinder, mark the cylinder and the whorl and turn the former around once by hand and count the number of times the whorl revolves. Usually the pulley is marked and turned also. In this way the proper relation can be found, regardless of the tables furnished by machine builders.

If by using a small band the spindles run faster, it is the small band that should be used, but this can be judged by the size of spindle, speed, and the count of the yarn spun, a heavy spindle requiring a heavy band. It is impossible to have the spindles all running at the same speed, even if the bands are all the same size, because bands get slack before breaking off, and atmospheric changes affect them, as they do cotton in other processes. The bands should be as even as possible and tied with a small and durable knot. There are several good knots in use. In tying on the bands one must not be tied up tighter than the other. The band pull should be about 2 to 2 1/2 pounds. By this it is evident that the band is far from being the proper means of driving the spindles and it is hoped that some arrangement will be found whereby the spindle will be driven at a uniform speed without the trouble and expense of bands.

Of the imports of cotton into Great Britain during the year 1908, about 77 per cent. was contributed by the United States, 17 per cent. by Egypt, and 3 per cent. by British India.

THE APPROXIMATE COST OF MILL BUILDINGS.

CHARLES T. MAIN, 201 Devonshire St., Boston, Mass.

(The following article is a revision of a paper read some years ago before the New England Cotton Manufacturers Association.)

It is sometimes convenient to be able to tell off-hand the approximate cost of proposed buildings, or the cost if new, of existing buildings without going through an estimate of all the quantities of materials and labor.

It is not an uncomon thing to hear the cost of mill buildings placed from 70 cents to $1.00 per square foot of floor space, regardless of the size or number of stories. There is, however, a wide range of cost per square foot of floor space, depending upon the width, length, height of stories and number of stories.

Some time ago, I placed a valuation upon a portion of the property of a corporation, including some 400 or 500 buildings. In order to have a standard of cost from which to start in each case, I prepared a series of diagrams showing the approximate costs of buildings varying in length and width and from one to six stories in height. The height of stories also was varied for different widths, being assumed 13 feet high if 25 feet wide, 14 feet if 50 feet wide, 15 feet for 75 feet, 16 feet for 100 feet and over.

The costs used in making up the diagrams are based largely upon the actual cost of work done under average conditions of cost of materials and labor and with average soil for foundations.

The costs given include plumbing, but no heating, sprinklers, or lighting. These three latter items would add roughly ten cents per square foot of floor area.

USE OF DIAGRAMS.

1. The diagrams can be used to determine the probable approximate cost of proposed brick buildings of the type known as "slow-burning" to be used for manufacturing purposes with total floor load of about 75 pounds per square foot and these can be taken from the diagrams readily. For example, if it is desired to know the probable cost of a mill 400 feet long by 100 feet wide by 3 stories high, refer to the sheet showing the cost of three-story buildings. On the curve for buildings 100 feet wide, find the point where the vertical line of 400 feet in length cuts the curve, then move horizontally along this line to the left-hand vertical line, on which will be found the cost of 81 cents.

The cost given is for brick manufacturing buildings under average conditions and can be modified if necessary for the following conditions:

a. If the soil is poor or the conditions of the site are such as to require more than the ordinary amount of foundations, the cost will be increased.

b. If the end of a side of the building is formed by another building, the cost of one or the other will be reduced slightly.

c. If the building is to be used for ordinary storage purposes with low stories and no top floors, the cost will be decreased about 10 per cent. for large low buildings, to 25 per cent. for small high ones, about 20 per cent. usually being fair.

d. If the buildings are to be used for manufacturing purposes and are to be substantially built of wood, the cost will be decreased about 6 per cent. for large one-story buildings, to 33 per cent. for high small buildings, and 15 per cent. would usually be fair.

e. If the buildings are to be used for storage with low stories and built substantially of wood, the cost will be decreased from 13 per cent. for large one-story buildings, to 50 per cent. for small high buildings, and 30 per cent. would usually be fair.

f. If the total floor loads are more than 75 pounds per square foot the cost is increased.

g. For office buildings, the cost must be increased to cover architectural features on the outside and interior finish.

The cost of very light wooden structures is much less than the above figures would give.

Table 1 shows the approximate ratio of the costs of different kinds of buildings to the cost of those shown by the curves.

2. The diagrams can be used as a basis of valuation of different buildings.

value can be approximately determined by making the proper deductions.

3. The diagrams can be used as a basis for insurance valuations after deducting about 5 per cent. for large buildings to 15

Superficial feet of Floor in one story	FRAME MILLS						BRICK STORE HOUSE						FRAME STORE HOUSE					
	1 Sto.	2 Sto.	3 Sto.	4 Sto.	5 Sto.	6 Sto.	1 Sto.	2 Sto.	3 Sto.	4 Sto.	5 Sto.	6 Sto.	1 Sto.	2 Sto.	3 Sto.	4 Sto.	5 Sto.	6 Sto.
1250	.86	.67					.80	.73					.70	.51				
2500	.86	.73					.85	.73					.75	.58				
5000	.89	.78	.75	.73	.70	.67	.83	.80	.78	.76	.76	.75	.74	.60	.56	.53	.51	.48
7500	.90	.79	.77	.74	.71	.69	.85	.81	.78	.77	.76	.76	.77	.63	.58	.55	.53	.51
10000	.90	.80	.78	.75	.73	.70	.87	.81	.79	.78	.77	.76	.78	.65	.60	.57	.55	.53
15000	.91	.82	.79	.77	.75	.72	.89	.83	.81	.79	.78	.78	.81	.67	.64	.61	.59	.56
20000	.92	.83	.81	.79	.77	.74	.90	.84	.82	.80	.80	.79	.82	.70	.67	.64	.61	.59
25000	.92	.85	.82	.80	.78	.76	.91	.85	.83	.82	.81	.80	.83	.72	.69	.66	.63	.61
30000	.93	.86	.84	.81	.80	.77	.91	.86	.84	.82	.81	.81	.84	.73	.70	.67	.65	.62
35000	.93	.87	.84	.82	.80	.78	.92	.86	.84	.83	.82	.81	.85	.74	.71	.68	.66	.63
40000	.93	.87	.85	.83	.81	.79	.92	.87	.85	.84	.83	.82	.86	.75	.72	.69	.67	.64
45000	.94	.87	.85	.83	.82	.79	.92	.87	.85	.84	.83	.82	.86	.76	.72	.70	.67	.65
50000	.94	.88	.86	.84	.82	.80	.92	.88	.86	.84	.83	.83	.87	.77	.73	.71	.69	.66

TABLE 1. SHOWING RATIO OF COST OF BUILDINGS DESIGNATED, AS COMPARED WITH BRICK MILLS OF STANDARD CONSTRUCTION.

A building, no matter how built, nor how expensive it was to build, cannot be of any more value for the purpose to which it is put than a modern building properly designed for that particular purpose. The cost of such a modern building is then the limit of value of existing buildings.

per cent. for small ones, for the cost of foundations, as it is not customary to include the foundations in the insurable value.

BASIS OF ESTIMATES.

Table 2 shows the costs which form the basis of the estimates and these unit prices

	FOUNDATIONS including excavations Cost per lin. ft.		BRICK WALLS. Cost per sq. ft. of surface.		Columns including piers and castings.
	for outside walls.	for inside walls.	outside walls.	inside walls.	Cost of one.
One Story Building,	$2.00	$1.75	$ .40	$ .40	$15.00
Two " "	2.90	2.25	.44	.40	15.00
Three " "	3.80	2.80	.47	.40	15.00
Four " "	4.70	3.40	.50	.43	15.00
Five " "	5.60	3.90	.53	.45	15.00
Six " "	6.50	4.50	.57	.47	15.00

TABLE 2. PRICES AND OTHER DATA USED FOR ESTIMATING THE COST OF BUILDINGS.

Existing buildings are usually of less value than new modern buildings for the reason that there has been some depreciation due to age and that the buildings are not as well suited to the business as a modern building would be.

Starting with the diagrams as a base, the

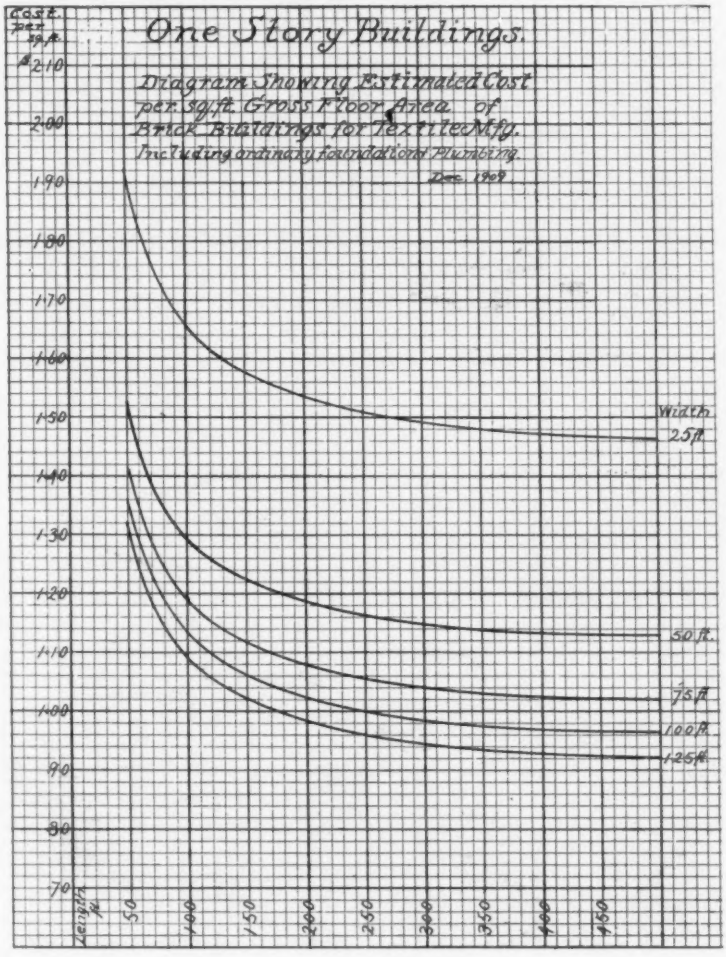
can be used to compute the cost of any building not covered by the diagrams.

The cost of brick walls is based on 22 bricks per cubic foot, costing $18 per thousand laid. Openings are estimated at 40 cents per square foot, including windows, doors and sills.

Ordinary mill floors, including timbers, planking and top floor with Southern pine timber at $40 per thousand foot board measure and spruce planking at $30 per thousand, costs about 32 cents per square foot, which has been used as a unit price.

width is increased. This is due to the fact that the cost of the walls and outside foundations, which is an important item of cost, relative to the total cost, is decreased as the width increases.

For example, supposing a three-story



Ordinary mill roofs covered with tar and gravel, with lumber at the above prices, cost about 25 cents per square foot and this has been used in the estimates.

Add for stairways, elevator wells, plumbing, partitions and special work.

DEDUCTIONS FROM DIAGRAMS.

1. An examination of the diagrams shows immediately the decrease in cost as the

building is desired with 30,000 square feet on each floor:

If the building were 600 by 50 feet, its cost would be about 99 cents a square foot.

If the building were 400 by 75 feet, its cost would be about 87 cents a square foot.

If the building were 300 by 100 feet, its cost would be about 83 cents a square foot.

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40000	.93	.87	.85	.83	.81	.79	.92	.87	.85	.84	.83	.82	.86	.75	.72	.69	.67	.64
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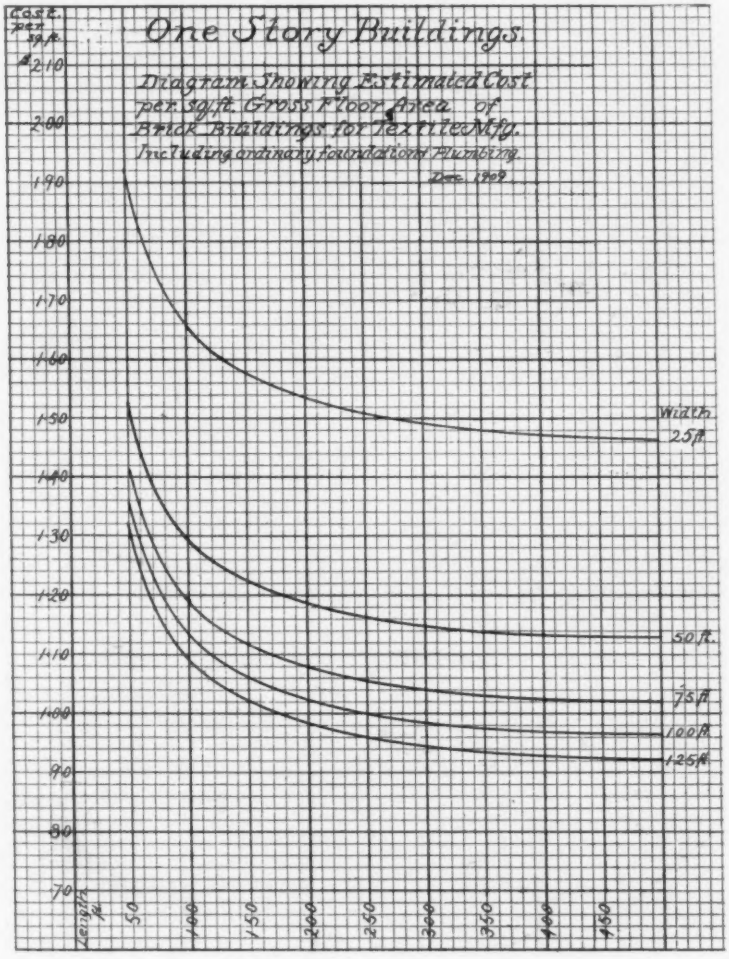

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If the building were 300 by 100 feet, its cost would be about 83 cents a square foot.

If the building were 240 by 125 feet, its

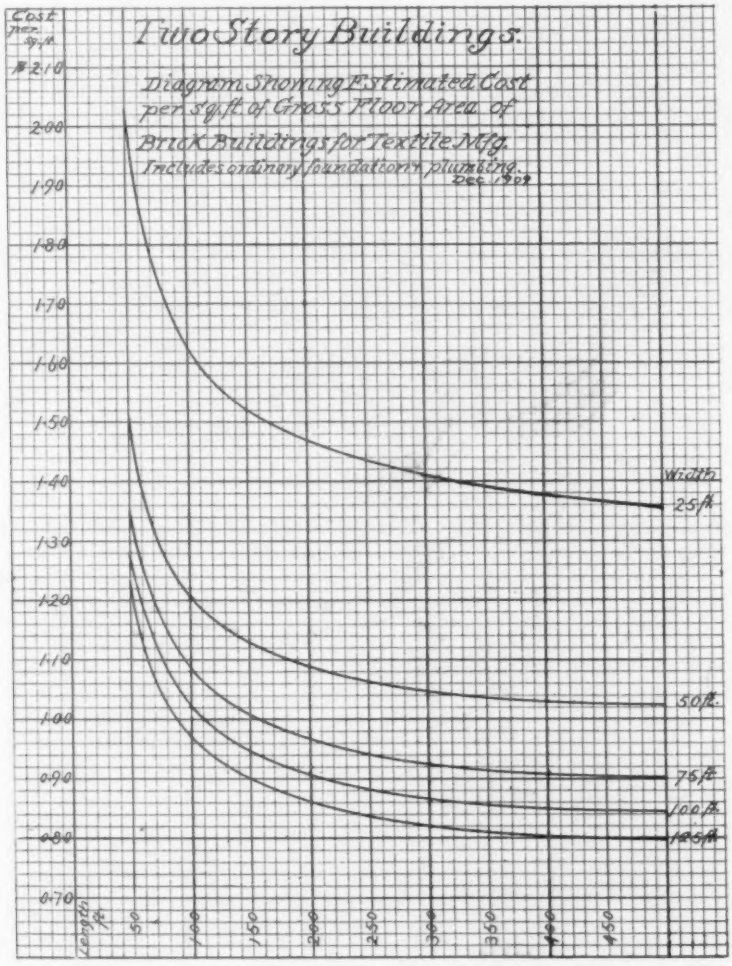
cost would be about 80 cents a square foot.

2. The diagrams show that the minimum cost per square foot is reached with a four-story building. A three-story building costs a trifle more than a four story. A one-story building is the most expensive. This is due to a combination of several features:

a. The cost of ordinary foundations does not increase in proportion to the number of stories, and therefore their cost is less per square foot as the number of stories is increased, at least up to the limit of the diagram.

b. The roof is the same for a one-story building as for one of any other number of stories, and therefore its cost relative to the total cost grows less as the number of stories increases.

c. The cost of columns, including the supporting piers and castings, does not vary much per story as the stories are added.



d. As the number of stories increases, the cost of the walls, owing to increased thickness, increases in a greater ratio than the number of stories, and this item is the one which in the four-story building offsets the saving in foundations and roof.

3. The saving by the use of frame construction for walls instead of brick is not as great as many persons think. The only sav-

ing is in somewhat lighter foundations and in the outside surfaces of the building. The floor, columns, and roof must be the same strength and construction in any case.

REINFORCED CONCRETE BUILDNGS.

From such estimates and proposals as I have been able to get from work done it appears that the cost of reinforced concrete buildings designed to carry floor loads of 100 pounds per square foot or less would cost about 25 per cent. more than the slow-burning type of mill construction.

HEIGHT OF BUILDING.	FOUNDATIONS. Including excavation. Cost per lin. ft.		BRICK WALLS. Including doors and windows Cost per sq. ft. of surface.	
	outside walls.	inside walls.	outside walls.	inside walls.
One Story,	$2.00	$1.75	$ .40	$ .40
Two Stories,	2.90	2.25	.44	.40
Three "	3.80	2.80	.47	.40
Four "	4.70	3.40	.50	.43
Five "	5.60	3.90	.53	.45
Six "	6.50	4.50	.57	.47

TABLE 3. ALTERNATE METHOD OF ESTIMATING COST. DATA FOR ESTIMATING APPROXIMATELY THE COST OF MILL BUILDINGS. SIZE KNOWN BUT NO DEFINITE PLANS MADE.

ASSUMED HEIGHT OF STORIES.

From ground to first floor 3 feet. Buildings 25 feet wide, stories 13 feet high. Buildings 50 feet wide, stories 14 feet high. Buildings 75 feet wide, stories 15 feet high. Buildings 100 feet wide, stories 16 feet high. Buildings 125 feet wide, stories 16 feet high.

Floors 32 cents per square foot of gross floor space not including columns. If columns are included, 38 cents.

Roof 25 cents per square foot, not including columns. If columns are included, 30 cents.

Roof to project 18 inches all around buildings.

Stairways, including partitions, $100 each flight.

Allow two stairways and one elevator tower for buildings up to 150 feet long.

Allow two stairways and two elevator towers for buildings up to 300 feet long.

In buildings over two stories, allow three stairways and three elevator towers for buildings over 300 feet long.

In buildings over two stories, plumbing $75 for each fixture including piping and partitions.

Allow two fixtures on each floor up to 5,000 square feet of floor space and add one fixture for each additional 5,000 square feet of floor or fraction thereof.

From the above data the approximate cost of any size and shape of building can be estimated in a few minutes. After the cost of the items given is determined about 10 per cent. should be added for incidentals.

ALTERNATE METHOD OF ESTIMATING COST.

Floors. Thirty-eight cents per square foot of gross floor space. This price will include column piers, column, castings and wrought iron.

Roof. Thirty cents per square foot including projection, say 18 inches, including columns, etc.

Stairways and Elevator Towers. Allow two stairways and one elevator tower in buildings over two stories high up to 150 feet long. Allow two stairways and two elevator towers up to 300 feet long. Allow three stairways and three elevator towers over 300 feet long.

Brick walls enclosing stairs and elevators, estimated as inside walls.

Stairs $100 per flight, per story.

Plumbing. Allow two fixtures on each floor up to 5,000 square feet of floor space, and add one fixture for each additional 5,000 square feet or fraction thereof. Allow $75 per fixture.

Incidentals. Add about 10 per cent. for incidentals.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Cloth Shear. L. H. A. Schwartz & Co., 713 Exchange Bldg., Boston, Mass., are introducing an improved cloth shear. The improvement consists in the use of knee-shaped spiral blades, which give a more durable and better cutting edge. This blade was brought out in Germany some years ago and at that time a notice of it was published in the Textile World Record. Since that time it has been thoroughly tested in woolen mills in all parts of Germany with the most satisfactory results.

Burr Cylinder. Leopold Offermann, Leipzig, Germany. An improved burr cylinder for woolen cards which is said to be giving excellent results in a number of Saxon mills.

Loom Brake. Ewald Wehner, Barmen, Germany. An improved brake for loom beams and warp spools on ribbon looms.

Brake for Warpers. Moritz Gminder, Barmen, Germany. A friction brake for regulating the tension of yarn on warping machines.

After Chroming Wool. Gustav Ulrich, Bruenn, Austria. A process of chroming dyed wool which it is claimed results in brighter and faster shades than have heretofore been obtainable.

Reclaiming Caustic in Mercerizing. Dr. Walther Moeller-Holtkamp, Eitorf, Germany. An improved method of reclaiming the caustic from liquor that has been used for mercerizing.

Spindle for Cop Dyeing Machine. Oscar Rothemann, Moelnda, Sweden. An improved spindle for holding the yarn in dyeing machines operated on the circulating system.

Winding and Spooling Machine. Maschinenfabrik Hermann Schroers, Krefeld, Germany. An improved winding and spooling machine which has been tested at the technical school at Reichenbach, Germany, with very satisfactory results. It is stated the tests show that this machine is capable of a production 300 per cent. higher than can be obtained from winding and spooling machines now in use.

Knot Tier. Joseph Stubbs, Ancoats, Manchester, Eng., is introducing a knotter for textile mills which it is claimed is not only very effective, but is sold at a low price.

Oiler for Wool. The British Humidifier Co., Blackburn, Eng., have adapted their spray device for the oiling of wool and shoddy during the process of picking. This apparatus was first used for spraying water on the warp during weaving.

Wire Heddle. Adolph Wolf, Reichenberg, Austria. A wire heddle which has been designed to give increased durability.

Pulling-on Machine. Dronsfield Bros., Ltd., Oldham, England. A machine for covering spinning frame rollers. It is specially designed for drawing the leather sleeves upon rollers of small diameter such as are used on mules.

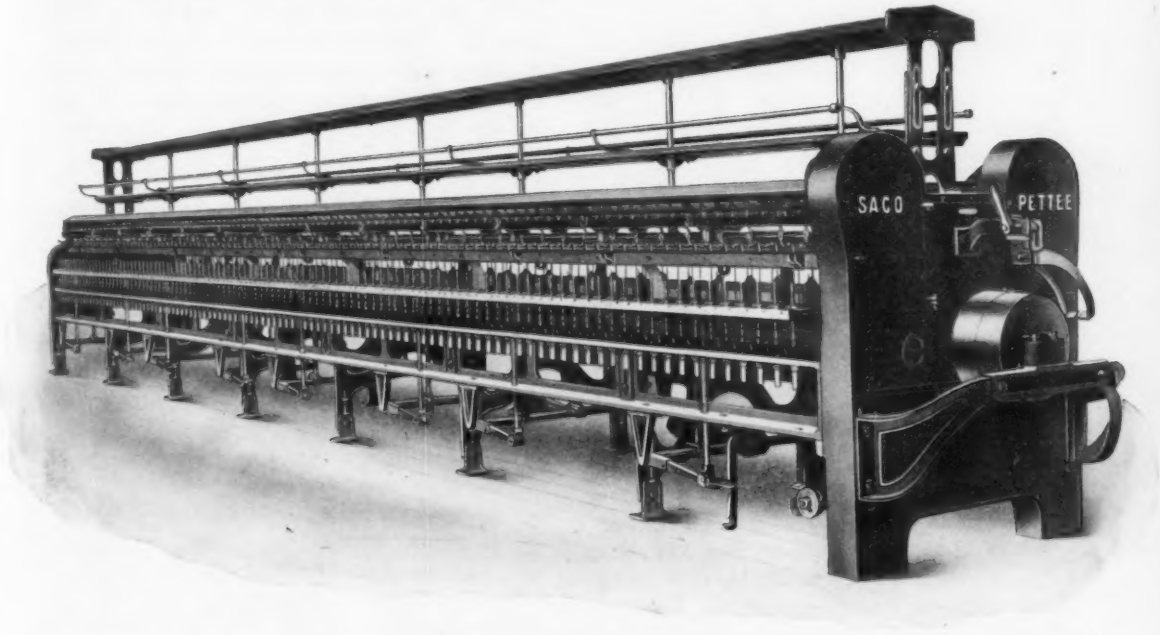
Electrolytic Scouring Machine. Baudot et Cie, Tourcoing, France. A method and the necessary machinery for scouring wool or cloth by the electrolytic process.

Piling Machine. Whitehead & Poole, Radcliffe, England. A machine for folding cloth in compact piles in bleacheries and dye houses.

THE SACO & PETTEE IMPROVED SPINNING FRAME.

The spinning frame shown in the illustration is the product of the Saco & Pettee Machine Shops, Newton Upper Falls, Mass., or Biddeford, Me. It embodies the highest development of the art of ring spinning and of machine manufacture.

The frame is designed to give strength and rigidity throughout, and consequent steadiness of running. The importance of stability in the machine is now much better appreciated than when the high speeds of the modern ring spindles were first obtained. The spinning frames built by this shop have always maintained a high position in this respect, but the advent of present-day machine tool development, and methods of manufacture, have enabled these progressive builders of cotton machinery to place upon the market a frame which embraces strength and stability without being inaccessible and cumbersome.



THE SACO AND PETTEE SPINNING FRAME.

The spindle rail is of the box-rail or girder type, and the samson has been redesigned to gain additional width of this rail. The rail is of the extreme depth possible with the standard height of a spinning frame. With this extra depth and width, and its being double bolted to the several samsons on milled surfaces, the frame gains in strength and in workmanlike construction.

All the surfaces of the box-rail are of milled finish, so that the brackets and parts to be bolted to the rail are readily secured in place and in proper alignment without fitting. This is especially true of the spindles, where by care and accuracy of workmanship, the plumbing has been reduced to a minimum. The adjustable feature of the spindle rail, whereby it may be raised or lowered to maintain the required distance from the top of the bobbin to the guide wire, when any change of traverse is necessary, is especially desirable. This frame may be adjusted to the proper conditions for spinning any numbers of cotton yarn without resorting to the purchasing of additional parts or

expensive changes. Provision is also made for raising and lowering of the cylinder and bearings to conform to the desired position of the spindle rails.

An inconspicuous but important feature of the cylinder lies in the ring oiling, ball and socket bearings. Ordinarily cylinder bearings are oiled at least once every day, but oiling once a week is sufficient with this new bearing, and with better lubrication insured. Actual and careful experiments have demonstrated the value of the ball and socket feature, whereby the high speed cylinder shaft always runs free, without cramping and binding. The cylinders themselves are true and are perfectly balanced at a speed higher than they are called upon to run in actual use.

The ring rails are made of channel beam form, in shorter lengths to prohibit sagging, and to prevent any binding of the lifting rods. These lifting rods run in patented split bushings, secured in the top and in the bottom rail of the girder or box-rail. Any of these bushings may be removed in a moment to clean or to replace, while the frame is running. The lifting rods themselves are carried by an improved form of lifting arm, as shown in the illustration of the frame. The end of the arm carrying the truck may be raised or lowered readily by turning the screw at the opposite end of the arm, and the ring rail easily adjusted to a perfectly horizontal position. It will be readily seen that the cross shaft may continue to rotate even though an arm should be prevented from revolving, because of an obstruction, such as a bobbin on the floor, and a "smash up" thus avoided. A maxim in machine tending is that with parts and adjustments simple and accessible, the machine will receive better care. In a consideration of this principle the importance of the simple mechanism for keeping the ring rails in trim is emphasized. The rings held level and securely on the ring rail travel steadily and smoothly in the plane of the spindles.

All gears are cut and ample, but accessible arrangements are provided for oiling the gearing and all bearings. Excepting the roll change, all gears are enclosed in the "head" of the frame which keeps the teeth and the bearings free from dirt and fly and prevents accidents.

The change gears revolve about the studs carried by swing-arms, which revolve about the driving gears, so that in making a change of a gear it is necessary only to mesh properly the gear changed; the proper relation of all other gears remaining undisturbed.

The arrangement for driving the builder heart is a distinctive feature of this frame. A short train of gears drives a shaft and worm and eliminates any back lash in the builder, and a properly laid bobbin results. The short train of gears also affords an opportunity for readily making a change of the speed of the builder heart to accomplish the most desirable lay of the yarn on the bobbin, according to the conditions and the number of the yarn.

The improved form of builder is readily adjustable to any traverse, and the change from the warp motion to the filling motion or vice versa, is accomplished in a few moments and in a very simple manner, by changing only one piece in addition to the heart.

The frames are regularly furnished with a heavy, adjustable bracket or outrigger for carrying an extra bearing for the cylinder shaft outside of the main tight and loose pulleys.

This bearing is of the ring oiling type, and carries also the sleeve on which the loose pulley revolves independently of the cylinder shaft and the tight pulley. The loose pulley is of the self oiling type, and does not throw oil. Either the pulley or the bearing may be supplied with oil while running or stopped.

The Saco & Pettee Machine Shops build any of the modern high speed spindles, but have made a specialty for nearly thirty years of the so-called McMullan spindle. This spindle has been widely introduced and satisfactorily used for many years. The special distinctive feature of this spindle lies in the bearing, with its loose locked steps encased in the bolster. A longer bearing, a steadier running spindle, less jarring, pounding and

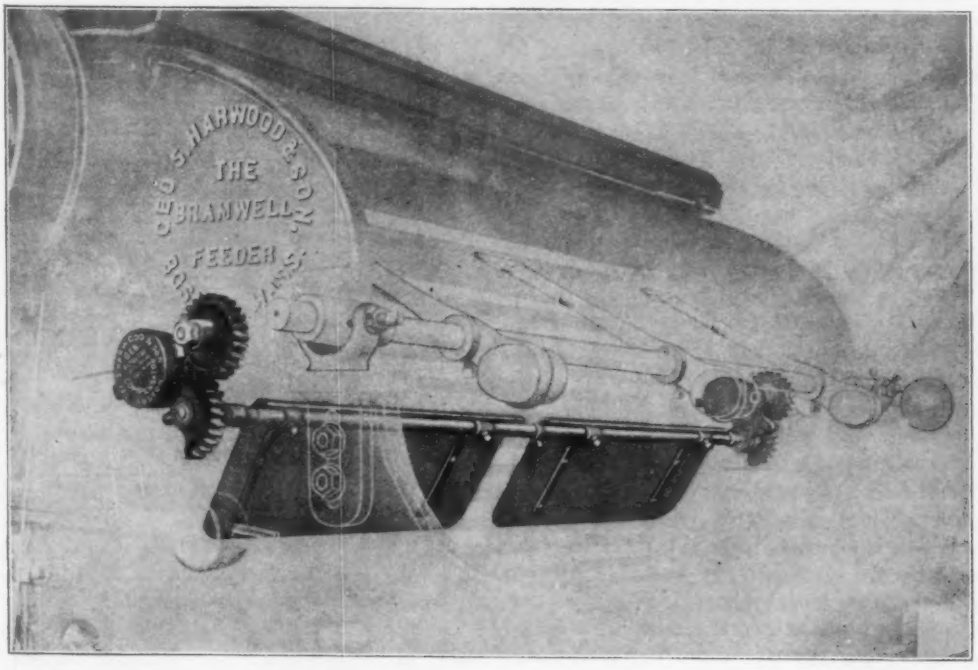
vibration, and no adjustments required are the advantages gained in this simple and efficient spinning spindle.

A very complete catalogue with more detailed description of this spinning frame, with tables of production, floor space and data will be furnished those interested upon application to the builders, the Saco & Pettee Machine Shops, Newton Upper Falls or Biddeford, Me.

THE GEB COMPENSATOR FOR BRAMWELL CARD FEEDS.

A difficulty in feeding first breaker cards which has for years engaged the attention of inventors, has been the variation in the feed due to the varying quantity of stock in the feed boxes. Some years ago George F. Geb, Franklin, Mass., invented a device for maintaining a uniform feed regardless of the quantity of material in the boxes, and the device has proved to be a complete success. The control of this important attachment has been acquired by George S. Harwood & Son, builders of textile feeding machinery, Boston, Mass., who are now placing it on the market. The Geb compensator as applied to a first breaker card feed is shown in the accompanying illustration.

When the feed box is reasonably well supplied with stock the compensator does not work. If there should be extremes of feeding and the stock should run low the Geb device prevents an uneven supply by holding the stock on the spike apron so that the scale obtains the required weight up to the very last feed. Messrs. Harwood & Son have recently redesigned and improved the construction of the Bramwell feed used for wool washers and dryers, and are confident that these machines for feeding wool in the grease in large quantities cannot be excelled. Among the mills that have installed them during the past year are the Ayer Mill and Wood Worsted Mill at Lawrence, and the Hartford Carpet Corporation.



THE GEB COMPENSATOR.

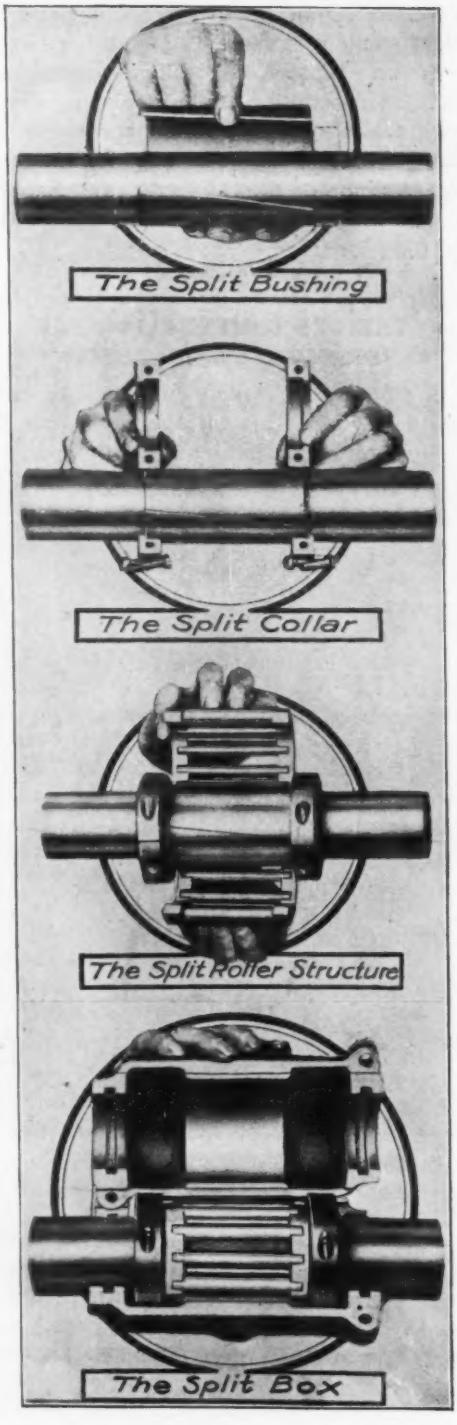
THE NEW SELLS ROLLER BEARING.

A great deal of interest is manifested in a new roller bearing being marketed by the Royersford Foundry & Machine Company, Inc., Royersford, Pa. John D. Sells, the inventor of the bearing, for whom it is named "The Sells Roller Bearing," has been for years identified with the "Standard" roller bearing, therefore the new "Sells" is the product of long experience and a comprehensive knowledge of the exacting requirements of roller bearings.

The Sells roller bearings are universal in adaptation. Any bearings of a given size can be fitted to any hanger, post hanger or pillow block of a corresponding size, either for new installation or for substituting in a plant previously equipped with the old style of plain or self oiling bearing. The Sells roller bearing can be easily substituted for old style bearings without moving the frames or anything on the shaft as they are split, making them just as easy to apply as a split steel or wood pulley. This feature is an equal advantage in the erection of new equipment.

Another advantage of the Sells roller bearing is that all parts are interchangeable. In case any part of the bearing should become mislaid or broken by accident it can be easily replaced, saving the expense of ordering a complete box. Instead of allowing the rolls to run loose in the box, the Sells has a self contained roller structure, a split steel cage, which holds the case hardened steel rolls equally separated from each other. This eliminates all the friction caused in the old style box where the rolls revolve against each other and also insures that the rolls will revolve parallel with one another and not diagonally with the box.

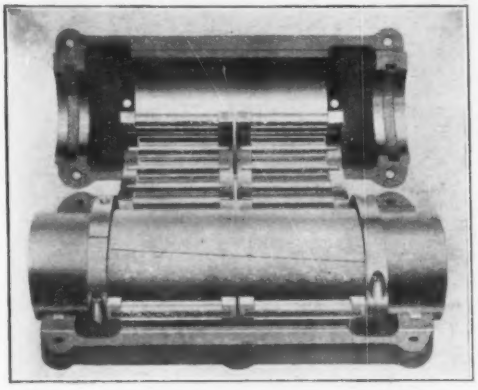
To prevent the shaft from being cut and scored by the case hardened steel rolls, the Sells roller bearing is fitted with a hard steel split bushing clamped on the shaft by two split collars. This is obviously an economical feature, as bearings without this protection have often been known to so badly cut the shaft as to make it useless. In order to increase the adaptability of the Sells roller bearing and to broaden the scope of its usefulness it is so constructed that these bush-



ings can be varied in thickness that the bearings may be fitted to varying diameters of shafts.

This enables the user to change his shaft or adapt same to different bores as he desires, and each roller structure is susceptible to three such changes of bushings. The manufacturers emphasize that this makes it unnecessary for the dealer to carry a large stock of these bearings, it only being necessary to carry an extra stock of odd sized bushings.

The steel split collars which clamp this bushing to the shaft also perform another very important duty. Being fast to the shaft they rotate at a speed three times as great as that of the roller structure itself and

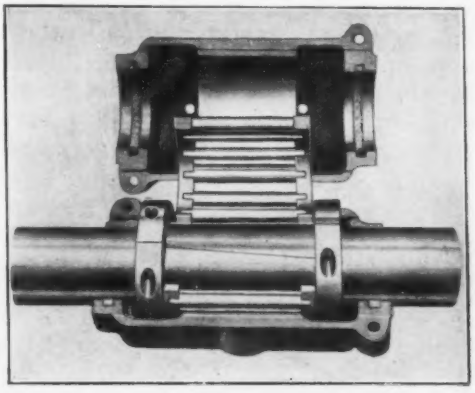


DOUBLE BOX FOR HEAVY DUTY.

therefore provide a rotating surface for the ends of this roller structure to run against, thus aiding the latter considerably. In other roller bearings the roller structure runs against the box itself, which being stationary retards the roller structure, where the Sells construction aids it.

As the photographs illustrate, all end thrust friction is eliminated in the Sells roller bearing by its being of the full floating type. This point should appeal strongly to the user of shaft bearings for end thrust friction in roller and ball bearings has always been the cause of a great deal of trouble.

The two halves of the Sells are fitted together by milled joints in order to make them dust proof and to further insure them against dust the manufacturers use a heavy felt wiper at each end of the box, which at the same time prevents oil from running out of the box. They have also fitted the box



THE COMPLETE BEARING.

with drain holes so that it may be flushed with kerosine or other cleansing fluid when the oil thickens or gums. Tapped holes in the top of the box provide for oil cups. For head shaft or jack shaft purposes 3 11/16 or larger, the manufacturers equip the Sells with a double roller structure to provide a longer and more suitable bearing surface for these heavily loaded shafts.

The manufacturers claim that the Sells roller bearing will reduce the friction load 50 per cent. and in some instances the saving has been 65 per cent. An interesting feature in this respect is that they have found the larger the shaft, the heavier the load and the greater the speed, the greater is the percentage of saving. The manufacturers announce that for the present at least their bearing will be sold for 50 per cent. less than any other roller bearing on the market.

The chief exports of Plauen during the first half of 1909 were as follows: Cotton lace and embroidery, $1,221,244, an increase of $448,271; woolen dress goods, sold or consigned, $331,365, an increase of $154,207.

The number of cotton spindles in use in the entire world March 1, 1909, is 130,795,927, as against 125,097,583 on the same date of the previous year.

A SPOOL HEAD GLUING PRESS.

The illustration shows the improved spool head gluing press built by the Defiance Machine Works, Defiance, O. It is intended for pressing spool discs or flanges together after having been coated with glue on the automatic spool head gluing machine, which is also built by the Defiance Machine Works. These are companion machines and have equal capacity, one operator attending to both. The power of the improved gluing press has been greatly increased, it being capable of a pressure of 60,000 pounds. This high pressure is necessary in order to make the glue joints thoroughly tight and prevent them from springing after being fitted to the spool. If the wood is well seasoned, gluing at this high pressure gives a tight and permanent joint.

IMPROVED SPOOL HEAD GLUING PRESS.

The machine will handle spool heads up to 12 inches in diameter. As fast as the spools are coated with glue they are slipped on a steel spindle of the press, which has a space of 34 inches in length. When the spindle has been filled it is placed in the machine and pressed tightly to the proper place. Then with the pressure still on the heads are locked in position by slipping a key behind the collar through a hole in one end of the shaft. The screw is then reversed and a spindle carrying the discs is set to one side to dry.

The machine is of modern design, the frame being cast in one piece. The screw is driven by a powerful double friction clutch and heavy cut gearing, and can be run in either direction, the change being effected by a slight touch of the friction lever. The operator can start or stop the machine instantly and obtain any pressure required. The tail stick can be easily adjusted on the frame for short or long work.

The Defiance Machine Works build a complete line of the machinery for making bobbins and spools.

In 1908 there was exported through the port of Durban 24,117,180 pounds of wool, valued at $3,209,359; through the port of East London, 39,102,112 pounds, valued at $4,803,420; through Port Elizabeth, 32,195,275 pounds, valued at $4,137,367; and through Cape Town, 6,605,907 pounds, valued at $976,706. During 1907 the Durban wool exports were 20,264,098 pounds and during 1906, 17,870,336 pounds.

THE SCHUTTE AND KOERTING CO'S. SYSTEM OF HUMIDIFYING.

By Oscar Nagel, Ph. D., Chemical Engineer.

The main fact to be considered in humidifying installations is the characteristic capacity of the air to absorb more water as the temperature increases. The air is called saturated when it contains the maximum humidity corresponding to its temperature, while relative humidity is the ratio of a moisture of a certain temperature to the saturation at the same temperature.

The type of system is to be used in a factory depends upon the local conditions and the special purpose. (1) If humidity is the only effect to be obtained, a number of individual moistening appliances operated by either water pressure or compressed air are distributed over the room. (2) If besides humidifying, fresh air is to be furnished, moistening is effected from a central chamber in which the water is atomized, the saturated air being conveyed to the room through pipes by means of rotary blowers.

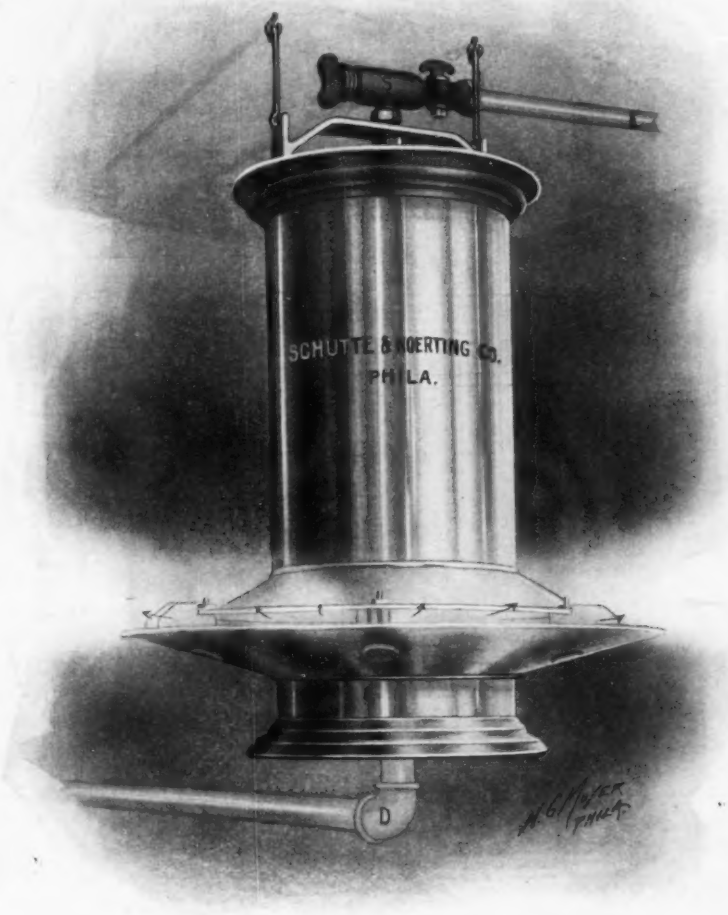


FIG. 1.

This type can be built either with a central chamber or with individual chambers for each room. As in this system fresh air which can be heated is provided to the shops, etc., the effects of ventilation and moistening can be combined in summer, while in winter ventilating, humidifying and heating is performed by one installation in one operation. In many cases a combination of both systems is used in order to provide positive air supply and individual humidifying, where a high percentage of moisture is desired.

(1(An overhead humidifier working with water pressure which has given good satisfaction is shown in Fig. 1. This apparatus which is manufactured by the Schutte & Koerting Co., Twelfth and Thompson Sts., Philadelphia, Pa., is simple and efficient, and the quantity of water to be atomized is easily regulated. The action of this apparatus is based upon the atomizing of water by means of Koerting spray nozzles. Two

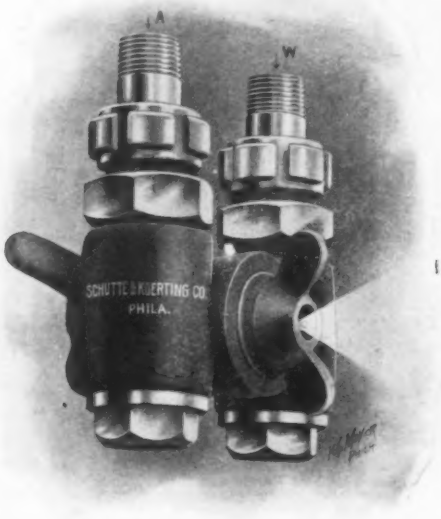


FIG. 2.

of these nozzles are provided in each humidifier. Both of them drive in the same direction and thus cause a strong draft and a perfect atomizing of the water, which is transformed into a fine mist. The water which is not absorbed flows off through a drain pipe. This apparatus consumes per hour 30 gallons of water at 90 to 100 pounds' pressure, Two to five per cent of the water used is absorbed by the air. The number of

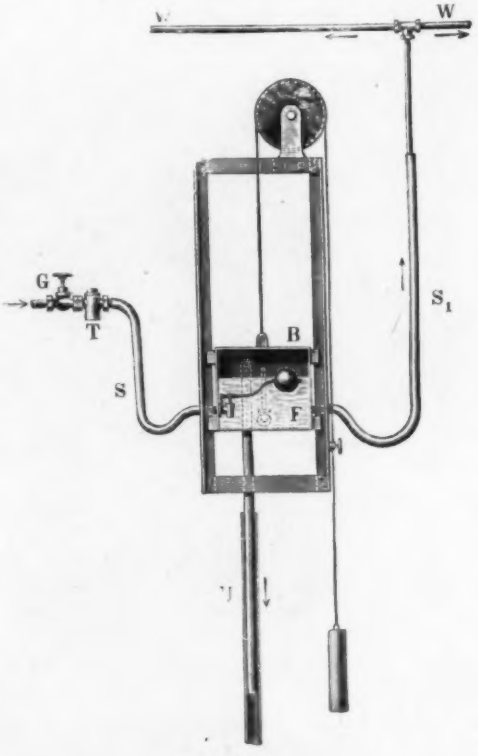


FIG. 3.

B, Water Tank. S, Supply Hose. F, Water Gauge. W, Pipe leading to Humidifier. U, Overflow.

humidifiers to be installed depends upon the size and height of rooms and on the material to be heated, Each humidifier is provided with a combined cock and strainer, whereby any humidifier can be by-passed, The pressure water is generally furnished by a pump which may be driven by steam, belt or electric motor. The pressure is kept uniform by means of a water pressure balanced valve. A filter is required if the water is not clean.

An overheated humidifier on which air pressure is used for atomizing the water is shown in Fig. 2. In this type which serves also for ventilating purposes, the water is

entirely absorbed by the air and no drops occur. The capacity of one of these humidifiers is from two to five gallons of water per

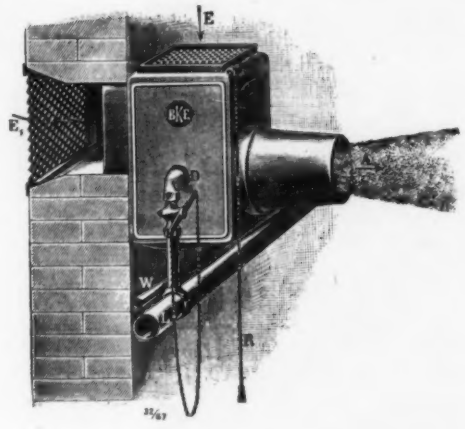


FIG. 4.

hour at an air pressure of 10 to 20 pounds. The water to be atomized is taken from a regulating tank to which it flows by gravity. These humidifiers are built "single" and "twin" with or without ventilating device.

The water nozzle is located in the center of the apparatus and contains a wire cloth wick in order to atomize the water thoroughly. This is the reason why this type is sometimes called "wick moisteners." The water nozzle is surrounded by the compressed air nozzle. From the latter the air is discharged in a rotary movement by means of a spiral cast in the air nozzle. When discharging, the air sucks the water and atomizes it perfectly. The construction allows easy inspection. On the humidifier with ventilating device the humidifier is surrounded by a cast iron casing, which is provided with flaps in order to take air from either inside or outside of room.

The moisteners should be equally distributed over the room and fixed near the ceiling. The best position is over the passages between the various machines so that the spray does not strike against the walls or elsewhere. Before the apparatus is set to work the pipes should be blown out with compressed air or washed out with water under pressure. The regulating tank, B, Fig. 3, should be at its lowest point before commencing to work. The air pump is then started, the water valve opened, and the regulating tank brought to a suitable height, depending upon the hygrometric conditions. With the regulating tank in its highest position the efficiency of the apparatus is at its maximum, becoming reduced as the tank is lowered. To stop the plant the valve should be closed, the regulating tank lowered, and then the air pump stopped. The air and water cocks on each humidifier are generally open, being closed only for the purpose of overhauling, or when a certain moistener is not used. A strainer is provided in the water pipe to keep out impurities. Fig. 4 shows a single humidifier with ventilating arrangement; Fig. 5, a double humidifier of

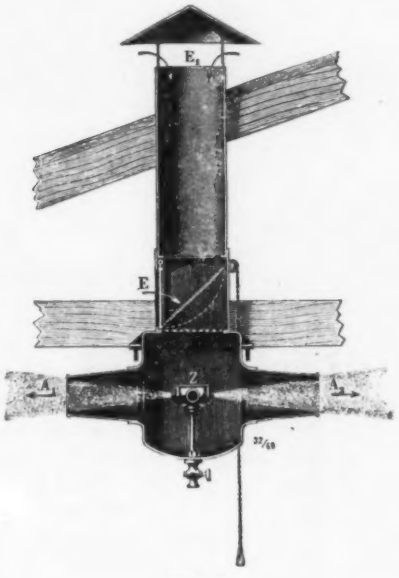


FIG. 5.

the same type. An installation of a double humidifier without ventilating device in a spinning mill is shown in Fig. 6. A special chamber is provided to which fresh air is drawn by a fan and then put under pressure.

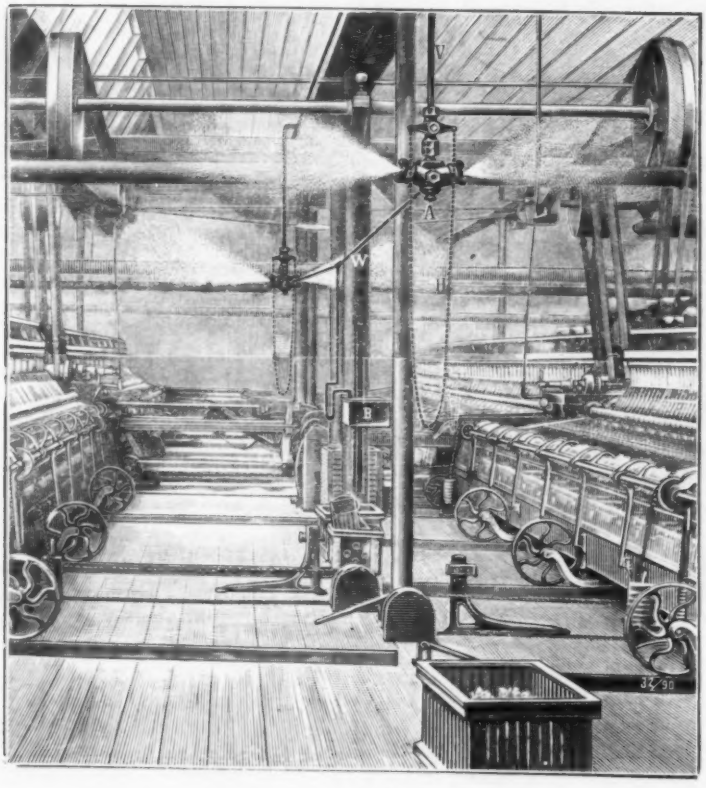


FIG. 6.

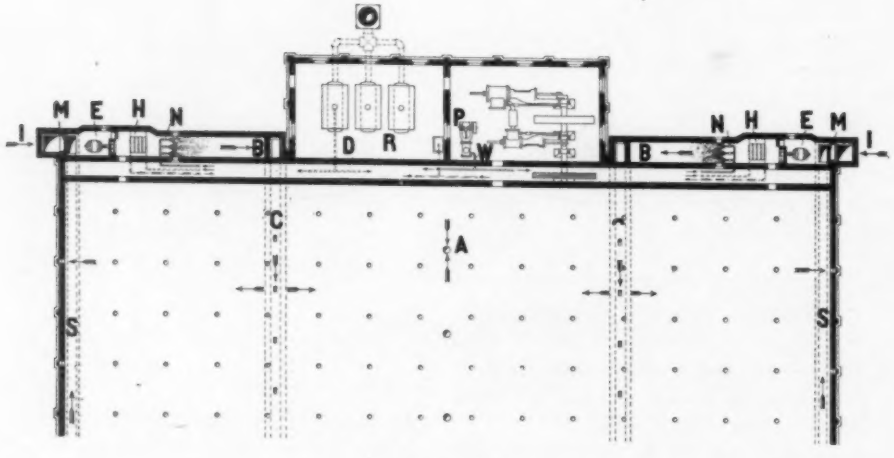


FIG. 7.

In the chamber it is brought in contact with atomized water, and thus becomes moistened, cooled and washed, being then discharged into the work room. During the winter months the air is heated. The discharge of foul air from the work room is attained either through flues or by exhausters. Fig. 7 shows a complete humidifying and ventilating plant of a large spinning mill. The foul air is discharged at A; C, distribution pipes for humidified air; E, fan driven by electric motor; I, entrance of fresh air; N, spray nozzles; P, water pump; W, water pipe. Further information may be obtained on application to Schutte & Koerting, Twelfth and Thompson Sts., Philadelphia, Pa.

The exports of raw cotton to Canada amounted to 19,619 bales in 1880 and 131,453 bales in 1909.

SWITCHBOARD FOR THE AYER MILLS.

AMERICAN WOOLEN COMPANY, LAWRENCE, MASS.

By Emil Bern.

The switchboard just completed by the General Electric Company for the new Ayer Mill of the American Woolen Company, Lawrence, Mass., is one of the largest boards ever built for alternating current mill service.

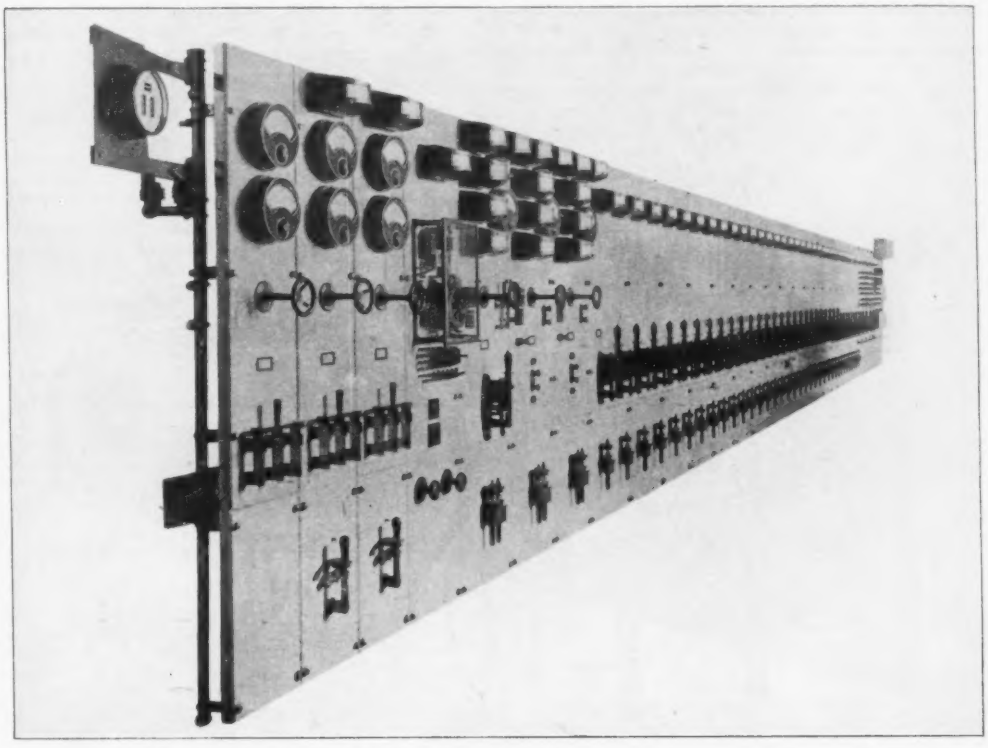


FIG. 1. SWITCHBOARD, AYER MILL, LAWRENCE, MASS.

This switchboard, shown at Fig. 1, consists of thirty-one marble panels with subbases, making a total length of 67 ft. 8 in., and is designed to control one 35 k. w. steam driven exciter, two 35 k. w. induction motor driven exciters, one 100 k. w. 600 v. 40 cycles alternater, two 2500 k. w. 600 v. alternaters, twenty-six 300 k. w. power feeder circuits, ten 200 k. w. power feeder circuits, four constant current transformers with oil cooled rectifiers, each equipment for

fifty arc lights, and twelve 600 v. single phase lighting circuits. A Tirrell regulator has been provided to keep constant bus voltage.

The 2500 k. w. generators are connected to the bus bars through solenoid operated circuit breakers of large capacity to take care of heavy overload and conditions of low power factor. These circuit breakers, having their control switches and overload time element relays mounted on their respective panels, are located at different points of the bus so as to give a more economical distribution and also to reduce the length of machine cables. The field switches for these machines are also solenoid operated from control switches on the board and are of substantially the same design as the circuit breakers.

The power circuits, constant current transformers and the 100 k. w. generator have automatic oil switches of the K3 type mounted on pipe frame work below the buses and about seven feet back of the switchboard. An overload inverse time element relay for the oil switch and an indicating wattmeter are provided for each power circuit. The series transformers for these are located below the oil switches, as shown in Fig. 2, in the leads between the switch terminals and the floor conduits. Asbestos barriers are being installed between the oil switches and between the different phases of the main bus for absolute safety.

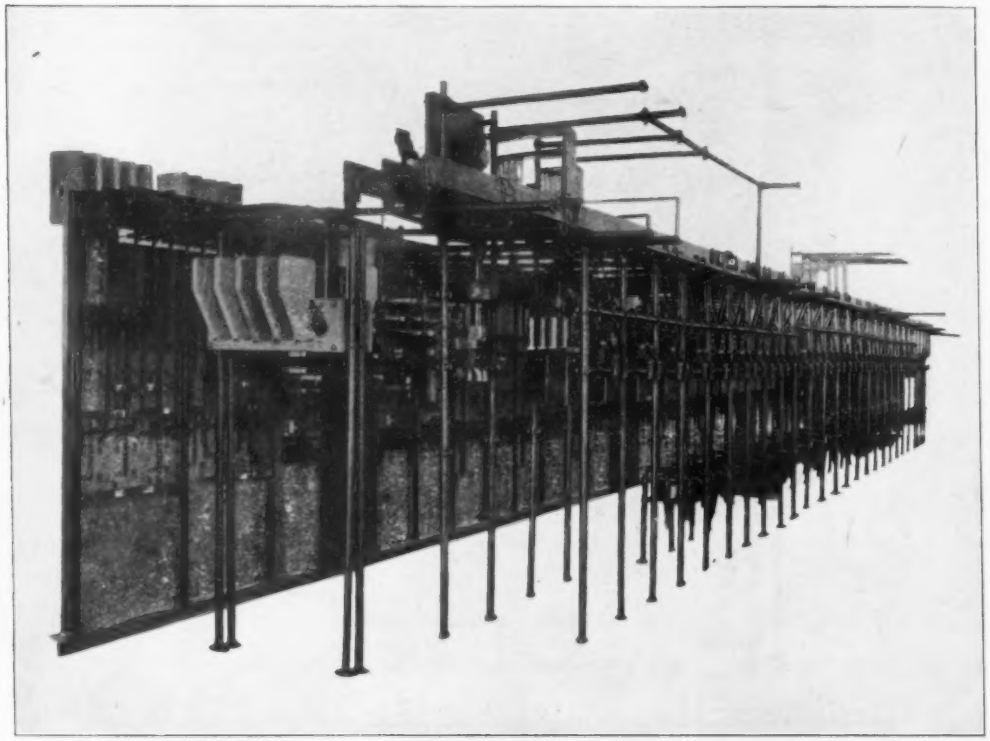


FIG. 2. SWITCHBOARD, AYER MILL, LAWRENCE, MASS.

The design of this switchboard is similar to another board built some time ago by the General Electric Company for the Wood Worsted Mills of the same customer, which switchboard has a total length of over 126 feet.

In 1774 England passed a bill forbidding the export of textile machinery.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

[Other Mill News on Pages in Advertising Section.]

COTTON.

New Mills.

Massachusetts, Boston. Construction work is going forward rapidly on the Maverick Mills and it is expected the buildings will be finished by May 1 and in operation by the middle of the summer. Robert Burgess and E. N. Foss have resigned from the Burgess Mills of Pawtucket, R. I., in order to devote all their energy to the Maverick Mills.

*Massachusetts, New Bedford. Contract for the construction of the new mill to be built for the Kilburn Mill has been awarded to the J. J. Prindiville Co. and preliminary work has been started. The capital stock was increased early in January from $750,000 to $1,500,000. The new plant will have equipment of from 40,000 to 50,000 spindles.

*North Carolina, High Point. The new cotton mill company will be known as the Pickett Cotton Mill. R. L. Steele of Rockingham, N. C., will be president; W. P. Pickett, vice-president; F. M. Pickett, secretary and treasurer. Plans call for mill of 12,000 spindles and 300 looms, to be operated by electricity. The capital stock is $250,000. It was originally proposed to organize a company with capital stock of $150,000.

*North Carolina, Lumberton. The Jennings Cotton Mill Co. has organized with H. B. Jennings, president and treasurer; A. E. White, vice-president; F. P. Gray, secretary and assistant treasurer. A cotton yarn mill to cost $275,000 will be built, but details have not been determined. As noted, Mr. Jennings is interested in the Dresden Cotton Mills and the Lumberton Cotton Mills of this place.

*North Carolina, Newell. A large amount of stock of the new cotton mill has been subscribed at Charlotte, and the balance of the proposed capital of $300,000 will probably be taken by the Southern Power Co. It has been decided that A. C. Hutchinson of Charlotte will be secretary and treasurer.

*North Carolina, Rockingham. Good progress is being made on construction of buildings for the Entwistle Mfg. Co. The main building will be 128 by 480 ft., with separate engine and boiler room. It will be equipped with 40,000 spindles and 1,000 looms. The capital stock is $500,000. Wm. Entwistle is president; Geo. P. Entwistle, secretary and treasurer, and W. B. Cole, vice president and general manager.

North Carolina, Winston-Salem. A 10,000-spindle cotton mill will be built by the P. H. Hanes Knitting Co. to cost $250,000. A location has been selected just west of the city on the Mooresville & Mocksville Railroad and construction work will be started very soon. It is planned to have the mill completed and manufacturing before the end of the year. Application has been made to the Secretary of State for an increase in capital stock from $100,000 to $250,000 to finance this new department. Plans will be drawn and contracts awarded just as soon as possible.

*North Carolina, Winston-Salem. C. R. Makepeace & Co., Providence, R. I., are preparing plans for the Inverness Mills Co. About $25,000 will be expended to erect a 2-story building, 75 by 300 ft., and the first installation of machinery will comprise 8,000 spindles and 200 looms. All machinery contracts have been awarded and contracts for construction work will be awarded about March 15. Lawrence McRae is secretary and treasurer.

*Oklahoma, Lawton. Work on the buildings for the E. L. Shuford Mfg. Co. has been started. Other particulars of this company's new plant have been given previously.

Rhode Island, Woonsocket. To form the complement of the new Holmes Mfg. Co. of New Bedford, which is just starting, Charles L. Harding of the firm of Harding, Tilton & Co., commission merchants of Boston and New York, has organized the Nyanza Mills with capital stock of $500,000. John W. Farwell has been elected president; Nathaniel F. Ayer, treasurer. These men with Edwin F. Greene, Edw. H. Rathbun, Wm. M. Wood, Ervin S. Dunn and Mr. Harding form the board of directors. Plans are now being prepared for a 4-story brick mill, 130 by 350 ft., and construction work will be started as soon as possible. Mr. Harding expects to begin manufacturing about December 1. The Holmes Mfg. Co. will make combed yarns from 36s to 120s, and it is proposed to make all combed yarns up to 36s or 40s in the Nyanza Mills on equipment of 25,000 spindles. A mercerizing department will be equipped as in the Holmes Mill. The capacity of this plant is 2,000,000 pounds of yarn per year, and the entire product will be sold by Harding, Tilton & Co. of Boston and New York.

*South Carolina, Great Falls. Two new mills, in addition to the plant under construction, will be built by the Republic Cotton Mill, making the total capacity 100,000 spindles.

*Texas, Ballinger. Organization of the proposed new cotton manufacturing company will be completed within a few days.

*Texas, McKinney. Work has been started on foundations for buildings of the Lone Star Cotton Mill. They plan to have the plant in operation by August.

Enlargements and Improvements.

*Alabama, Huntsville. The Lowe Mfg. Co. has awarded to T. C. Thompson & Bro. of Birmingham, contract for the addition recently announced. The new building will be 80 by 100 ft., of brick construction, and will be equipped with 300 looms when finished.

Connecticut, Danielson. Four new looms have been installed by the Danielson Cotton Co. to manufacture blankets. If this experiment proves successful it is expected more of these looms will be added later.

Connecticut, Taftville. New combing machinery is being installed by the Ponemah Mills, replacing old combers which have been thrown out.

Connecticut, Willimantic. At the annual meeting of the Windham Mfg. Co. it was decided to enlarge the plant by connecting Mills 1 and 2 by a 4-story building, 35 by 70 ft. The old officers were reelected.

*Connecticut, Willimantic. Plans for the new bleach house to be built by the Willimantic Mills (American Thread Co.) have been drawn by the company's engineers and contractors are now figuring on construction work. It is probable preliminary construction work will be started within a few weeks. This will be a 3-story brick structure.

Georgia, Forsyth. One thousand new spindles will be added to the equipment of the Ensign Cotton Mills, formerly known as the Forsyth Mfg. Co., which will bring the total equipment up to 6,000 spindles. Since the new owners took possession, the entire plant has been overhauled and a quantity of new machinery added. Contract for 12 new 40-inch cards is to be awarded in the near future.

Georgia, Forsyth. Electric power equipment of about 150 h. p. will be ordered by the Trio Mfg. Co. The Georgia Electric Co.'s power lines will be extended to Forsyth within a short time and as soon as this occurs the Trio Mfg. Co.'s plant will be changed to electric power.

Georgia, Macon. The Bibb Mfg. Co. will shortly place an order for more looms for their tire fabric department, as the present equipment is unable to turn out the quantity of product required. This department of the Bibb Mfg. Co. is now under the management of Mr. Marsden, the well known New Bedford (Mass.) mill man.

Massachusetts, Adams. The Berkshire Cotton Mfg. Co. has ordered twelve new combers.

*Massachusetts, Fall River. At a meeting of the directors of the Stafford Mills it was voted to let the contract for the proposed addition to No. 2 Mill. From 10,000 to 15,000 spindles will be added.

*Massachusetts, Lowell. At the annual meeting of stockholders of the Massachusetts Mills it was voted to increase the capital stock from $1,800,000 to $3,000,000. The Massachusetts Cotton Mills as soon as possible will erect three buildings, comprising an extension to the carding mill, 125 by 95 ft., 5 stories high; a spinning and weaving mill, 310 by 90 ft., also 5 stories high; and a boiler house, 285 by 50 ft., with a 250 ft. chimney. Plans for the boiler house and weaving and spinning mill are being prepared by Lockwood, Greene & Co., Boston. Details of new equipment have not been worked out. The new stock will be offered to stockholders at par in the proportion of two new shares for every three now held.

*Massachusetts, New Bedford. The new mill under construction for the Nonquit Spinning Co. is partly roofed in and it will probably be entirely roofed in within a few weeks. When this work is completed the interior will be rushed to completion and machinery equipment installed.

New Hampshire, Claremont. In the near future the entire plant of the Monadnock Mills is to be changed over to electric power. Motors are now being installed in the bleachery, which is the first department to be changed.

*New York, Capron. It is proposed to immediately re-equip the Utica Cotton Co.'s plant with new machinery replacing most of the old equipment, which is for sale. The plant is being operated by Geo. A. Frisbie and F. A. Bosworth, receivers. A reorganization will probably be effected shortly after the meeting of creditors to be held February 19, and the product changed to combed peeler hosiery yarns, 10s to 40s, single and ply.

*New York, Cohoes. The spinning for Harmony Mills, Nos. 1 and 2, will be done exclusively in Mill No. 1, while the weaving for both mills will be done in Mill No. 2. There will be no changes made in Mill No. 3.

*New York, New Hartford. Stockholders of the New Hartford Cotton Mfg. Co. have voted favorably to increase the capital stock to $200,000 and the proposed new bleaching and finishing plant will be built.

North Carolina, Wadesboro. It is said the Wadesboro Cotton Mills plan to equip a weaving department to use the cotton yarns now manufactured for sale. J. W. Hathcock is secretary, treasurer and buyer of this company.

*Pennsylvania, Philadelphia. The Wayne Manufacturing Co., operating 20 looms on Turkish towels in the Dolan Mills, Mascher and Oxford Sts., was recently reported by us as having sold to other parties whose names were withheld. We have been informed that the purchasers of the plant are the Ferdinand Werner & Sons Co., manufacturers of ingrain and Brussels carpets on 33 looms on Glenwood Ave., below 2d St., who intend removing it to their present address and operating it in conjunction with their carpet business.

*Rhode Island, Anthony. The new mill of the Coventry Co. has been roofed in and picking and opening machinery is being installed. New turbine engines have arrived and will be set up as soon as possible.

*Rhode Island, Warren. Transfer of the property of the Cutler Mfg. Co. to John H. Estes and R. P. Walker has just been recorded. John H. Estes is president of the reorganized company and Mr. Walker is treasurer. It will be necessary to make some repairs to buildings and overhaul the machinery before manufacturing can be resumed, but these changes will be completed within a few months. Mr. Walker will have charge of the plant.

*South Carolina, Greenville. There is no increase in the number of looms operated by the American Spinning Co., as the recent change was simply a matter of replacing 192 36-inch looms with the same number of 40-inch looms. The total equipment of the weaving department is 1,056 looms.

*South Carolina, Wellford. The Wellford Mfg. Co. reported incorporated last week with capital stock of $40,000, is a reorganization of the Jordan Mfg. Co., and steps will be taken at once to carry out the plan considered by the directors of the Jordan Mfg. Co. about a year ago to add a spinning department. The plant contains 36 looms, which are operated on towels and quilts. All yarns are bought. The reorganization will provide ample capital to start the proposed spinning department.

WOOLEN.

New Mills.

*Maine, Kennebunk. The Kennebunk Mills, a branch of the Goodall Worsted Co. of Sanford, has started some of the machinery.

*New Jersey, Camden. The new worsted yarn plant of Clark & Jones has begun manufacturing. The plant is equipped with 1,280 spindles and is making 10s to 32s worsted yarns on the Bradford system. They occupy about 8,000 sq. ft. of floor space and have about 4,000 sq. ft. of additional floor space which it is planned to equip if business warrants it.

*Ohio, Ravenna. Wool yarns, for their own consumption only, will be made in the branch plant of the Standard Knitting Co., Inc., of Cleveland, about to be located here.

Pennsylvania, Philadelphia. Messrs. Cansfield & Bernie have recently equipped a plant at 2834 Boudinot St. with a number of looms on which they propose to do a line of commission weaving.

*Rhode Island, Woonsocket. Plans for the Samoset Worsted Mills are completed and bids for construction work will be received in about a week or ten days. It is planned to begin work on foundations just as soon as the frost is out of the ground. The Samoset Worsted Mills will have 72,000 square feet of floor space with capacity of 1,000,000 pounds of yarn a year. There will be space for 10,200 spindles, but between nine and ten thousand spindles will be the initial equipment. Charles L. Harding of Harding, Tilton & Co., is president; Ervin S. Dunn, treasurer; and Walter Scott, formerly superintendent of the Woonsocket Worsted Mills, is superintendent. The product will be sold by Harding, Tilton & Co. of Boston and New York.

Enlargements and Improvements.

Connecticut, Winnipauk. Some of the old looms in the Norwalk Mills Co.'s plant are being replaced by new equipment. A line of fancy woolens is to be added.

*Illinois, Rockford. Remarkable progress has been made on repairing Dyson & Platt's Woolen Mill, which was gutted by fire three weeks ago. Within ten days they will be ready to install new machinery.

Massachusetts, Caryville. The Taft Woolen Co. has installed a new double shear in the finishing room.

*Massachusetts, Globe Village. The Hamilton Woolen Co. has engaged E. B. Ward to take charge of the proposed enlargement to their weaving department. Work will be done by their own help, Mr. Ward simply having charge of the work. This is a rush job on account of the need of this increase, and it is to be completed in April. The structure will be of brick mill construction, 100 by 212 ft., 2 stories high, with tar and gravel roof. The cost will probably be in the neighborhood of $50,000.

*Massachusetts, Holyoke. Bids are being received for construction of the proposed new mill for the Farr Alpaca Co. It will be of brick mill construction, 140 by 366 ft., 6 stories high. Foundation for the building is completed.

Massachusetts, Millbury. A new dewing machine has been installed by the Mayo Woolen Co.

*Massachusetts, Pittsfield. Work has been started on foundation for the addition to the weave shed of the Russell Mfg. Co. It will be 32 by 66 ft., 2 stories high. As noted previously, new looms will be installed.

Michigan, Detroit. The capital stock of the Armstrong Woolen Co. has been increased from $25,000 to $60,000. It is expected a proportionate increase in capacity will be made.

New Hampshire, Milton Mills. Two new looms have been installed in the blanket mill of John E. Townsend.

New Hampshire, South Wolfboro. Contract to build a new dam for C. W. Springfield & Co., proprietors of the Wolfboro Woolen Mills, has been awarded.

New York, Wegatchie. Curtis & Youland will add 5 new looms. A number of improvements have been made in the past few months.

New York, Yonkers. Work will soon be started on a new mill for the Alexander Smith & Sons Carpet Co.

*Ohio, Cleveland. Looms are being installed in the new mill of the Cleveland Worsted Mills Co.

Ohio, New Bremen. The Bakhaus & Kuenzel Co. are adding two new looms and a wool scouring machine. They operate 2 sets and 11 broad looms on wool bed blankets. Godfrey Kuenzel is

president; Henry Finke, treasurer, superintendent and buyer.

Pennsylvania, Darby. Three new boilers are being installed by the Griswold Worsted Co., each of 300 h. p. capacity.

Pennsylvania, Philadelphia. An addition is to be built to the dye house of the Andrew's Mill Co., Leiper and Adams Sts., Frankford. The dyeing department was added to this concern only a few months ago and the enlargement is the result of the increase in business. Dyeing machinery wili be installed and 2 boilers added.

Pennsylvania, Philadelphia. Horace Kenworthy, operating 5 sets, 900 spindles on woolen carpet yarns at Howard and Berks Sts., has removed his plant to Leverington Ave. and Wilde Sts., Manayunk, in the Keystone Mill, where he has secured more room and it is said increased the size of his plant.

Pennsylvania, Philadelphia. About 14,000 spindles will be added to the equipment of the Penn Worsted Co.

Pennsylvania, Philadelphia. James Doak, Jr. & Co., manufacturers of worsted yarns at Trenton Ave., Norris and Blair Sts., have recently purchased seven small dwellings adjoining their present plant. The purchase includes the buildings numbered 2012 to 2024 Blair St., having an area of 84 by 72 feet, for which they paid $9,775. It is reported that these properties were purchased by the company for the purpose of erecting a large addition to their present plant which now contains 8 combs and 6,300 spindles operated under the Bradford system.

Pennsylvania, Philadelphia. The Penhirst Mills, 62d and Baltimore Ave., Angora, of which Richard Shapcott is the proprietor, have recently installed additional machinery for the spinning of woolen yarns for the knitting trade. William M. Cathrall, 1029 Drexel Bldg., is sole agent.

Rhode Island, Carolina. A Stone wool dryer made by the James Hunter Machine Co. has been installed by the Carolina Mills Co.

*Rhode Island, Esmond. Following the increase in capital stock of the Esmond Mills, previously reported, the equipment will be increased to give an annual production of 1,300,000 blankets and robes.

Rhode Island, Thornton. Contract has been awarded by the Victoria Mills, H. Hartley & Co., Inc., Boston, proprietors, to A. C. J. Leonard Co. of Providence for a new boiler house. The plans call for a 1-story frame building with gravel roof.

Mills Starting Up.

*Connecticut, Norwich. For the present the new owners of the Clinton Mills Co. are doing business under the name of L. J. Saxton & Sons. They have started up the plant making samples. Later a corporation will be formed under the style of the Saxton Woolen Co., as reported previously.

Maine, Camden. The new company which will operate the Mt. Battie Mill is known as the S. G. Hall Mfg. Co. John H. Hall is president, and S. G. Hall, treasurer, manager and superintendent. The plant contains 5 sets and 40 looms, operated by water power. James Talcott of New York will be the selling agent. Mr. Hall formerly operated the S. G. Hall Mfg. Co. of Athol, Mass.

Massachusetts, Northboro. M. Robt. Weichert, president of the United Woolen Mills Co., which will operate the old Woodside Mills, has decided they will not make worsted yarns as contemplated, but will start up the old woolen machinery in the plant on woolen goods for the present. It is said that about $18,000 has been subscribed by Northboro business men.

Massachusetts, Uxbridge. The Uxbridge Worsted Co. has leased the carding and spinning departments of the Rivulet Mills, formerly occupied by the Richard Sayles Woolen Co., for six months with the privilege of extending this time. Yarns will be made for the line of wool cheviots formerly made by the Pine Tree Worsted Co. of Medway, Mass., now being made by the Uxbridge Worsted Co.

Massachusetts, Uxbridge. The Hecla Mill (American Woolen Co.), has been started up making yarn. Two large new boilers are being installed.

Pennsylvania, Brookville. The old Brookville Woolen Mills have been started up on samples and it is said the plant is to be operated with John Heidrick at the head. The mill contains 2 sets and 29 looms which were operated on dress goods, overcoatings, etc.

Mills Shutting Down.

*California, San Jose. As noted previously the San Jose Woolen Mills Co. has filed a petition asking for a dissolution of the corporation. The plant is shut down, and it is stated that although the company has always been on a paying basis, the present stockholders desire to retire, owing to advanced age. The machinery is for sale separately or if desired with the land and buildings.

SILK.

New Mills.

*Connecticut, Norwich. The two additions under construction for the J. B. Martin Co. are nearly completed. Work of setting up looms is in progress.

*Connecticut, Norwich. Alfred Neuberger, until recently president of the New England Silk Spinning Co. of this place, has leased the second floor of the Bacon Arms Bldg., and plans to start manufacturing about March 1.

*Connecticut, Stonington. Good progress is being made on the addition to the American Velvet Co.'s plant. Manufacturing has been resumed following the recent shutdown for stock taking.

Massachusetts, Cambridge. Wm. C. Thairwall & Co., 211 Albany Bldg., Boston, have purchased a lot of land on Tudor and Emily Sts., and will build a one-story factory building, 80 by 190 ft. At

present they manufacture machine twist, tram, floss, etc., on 2,500 spindles in leased quarters in Cambridgeport, but these quarters have been outgrown. It is said they expect to have the new factory running in June.

*Massachusetts, Northampton. The Northampton Silk Co. is advertising for bids for construction of its mill.

*New Jersey, Paterson. The new Knickerbocker Silk Co., incorporated last November, has equipped the top floor of the new Hall Mill at the corner of Summer and Harrison Sts. with 30 ribbon looms, manufacturing under the management of E. Friedman, formerly assistant manager of A. & M. Levy Co.'s plant.

Pennsylvania, Allentown. Twenty looms will be added to the present equipment of the Astron Silk Co. about April 1. At that time they expect to lease the remainder of the building in which they are located.

Rhode Island, Westerly. *William Washburn has leased the second floor of the Stone Mill on Main St. and is equipping it with silk throwing machinery. Martin Morgan will be superintendent of the plant.

Enlargements and Improvements.

Connecticut, Mystic. Within a short time the Ninigret Mills Co. will add the balance of machinery necessary to make up the full equipment they had in mind when starting. This addition calls for 112 new looms and 5,336 spindles for winding and warping. They make silk and cotton mixed and all silk goods. Otto O'Sullivan is president; Wm. E. Main, treasurer, and Peter Flynn, superintendent and buyer.

*Massachusetts, Taunton. Twenty-two 40-inch silk looms, for the manufacture of broad silks, comprise the new equipment of the Taunton River Mills.

New Jersey, Paterson. Plans are being considered by the Colonial Silk Co. for increasing their plant about July 1. New space has not been leased as yet.

New Jersey, Paterson. The Eagle Silk Co., reported incorporated last week, succeeds to the business of Bogen & Weberman, who operated a plant of 16 looms in the Gordon Mill. The plant will be increased to 22 looms at once, and a further increase is proposed.

*New Jersey, Paterson. Frank L. Hicks is operating 30 looms at 535-39 Tatowa Ave., and expects to have 72 looms in operation for the fall season. He is making high grade fancies for dress and tie goods trade.

New Jersey, Paterson. The plant of the Reliable Silk Throwing Co. has been moved to the Strange Mill, where quarters have been secured which will enable them to increase their equipment from 5,000 spindles to 12,000 spindles.

New Jersey, West New York. Rogers & Thompson have removed their Philadelphia plant to 20th St., this borough.

*Pennsylvania, Easton. Two new buildings will shortly be constructed for R. & H. Simon. These are in addition to the new mill just completed, which will be used for weaving broad silks, not ribbons as previously reported.

Pennsylvania, Mauch Chunk. Some changes are being made in the local plant of the Mauch Chunk Silk Co. and some of the spinners are being sent to the new mill at Nesquehoning. They expect later to install new machinery in both mills.

*Pennsylvania, Reading. Machinery is being removed from the old plant of the Steiner & Talcott Silk Co. into their new modern building. Work was started on this building last June. Some new equipment will also be installed.

Pennsylvania, Riegelsville. The Riegelsville Silk Co. has been incorporated with capital stock of $50,000. Samuel Aitkin, Paterson, N. J., operating a broad silk plant of 25 looms in the Barbour Mill, Spruce St., is at the head of this new corporation which takes over his business and will remove it to the mill buildings formerly operated by the Durham Knitting Mills of Riegelsville, which were purchased recently by Mr. Aitkin. As noted the Durham Knitting Mills, of which Lee S. Clymer was proprietor, have retired from business.

Pennsylvania, Weatherly. The Manhattan Silk Co. of Paterson, N. J., has leased the plant of the Onoko Mfg. Co. of this place, as reported probable early this month. Another building is to be erected equal in size to the original structure. Broad silks are manufactured.

Mills Shutting Down.

Connecticut, Gurleyville. E. L. Smith, silk throwster, is very busy and has started up his Mill No. 2.

Connecticut, South Manchester. Cheney Bros. have started manufacturing in the Bigelow Mill, formerly known as the Trotter Mill. The present equipment is 64 looms, but this number will be increased to 100 within a short time. These looms have been taken from the mill on Forest St. in which new looms are now being set up.

Mills Starting Up.

New Jersey, Hackensack. The Givernaud Bros.' local mill has been shut down indefinfiitely and the operatives paid off. Five hundred looms were operated on broad silks.

New Jersey, Paterson. The Cardinal Silk Co. has shut down owing to dullness in their line.

MISCELLANEOUS.

Connecticut, Meriden. The H. Adlman Co. has leased an additional floor and will increase their equipment to 750 braiders. A. Wirtz has been secured as superintendent. Mr. Adlman reports that everything points to a very successful season.

*Connecticut, Mystic. Machinery equipment for the Royal Linen Mills, Inc., is beginning to arrive and it looks as if the company would be ready to install machinery and equipment and be ready for operation as soon as the buildings are completed.

*Connecticut, New Hartford. New machinery is being set up in the old Greenwood mill under the direction of Samuel Diggle, an expert in the manufacture of linen, and Arthur S. Thomas, who will be manager of the plant. It is understood a secret process for manufacturing linen or some other long vegetable fiber is to be employed, but nothing has been given out by the company. The concern will do business under the name of the Greenwoods Co. At first the work will be largely experimental and will be conducted on a small scale.

Illinois, Chicago. Fred Strauss, proprietor of the Strauss Silk Dye Works at 2449-57 Lincoln Ave., with a branch plant at Evanston, Ill., has bought a piece of property, 153 by 125 ft., on which to build a new dye house. He is interested in plans.

Massachusetts, Chelsea. The Circular Loom Products Co. has purchased the lot at the corner of Highland and Suffolk Sts., and will put up a building 90 by 120 ft., 2 stories high, to manufacture conduits and coverings for cables. James S. Wilson, formerly connected with the American Circular Loom Co., is a large stockholder in the new company.

*New Jersey, Bridgeton. The addition to the plant of the Martin Dyeing & Finishing Co. has been completed and machinery is now being installed for mercerizing, dyeing and finishing. It is expected the plant will be running in about a month.

*North Carolina, Burlington. The Keystone Finishing Mills wil be located at Burlington, and will be devoted to dyeing, finishing, boxing and selling various lines of hosiery made by local mills, who are now selling their goods in the grey. There are a large number of such mills in this vicinity. Construction work on buildings will be started at an early date. J. H. Tate, who heads this company, advises that he expects to be ready to begin manufacturing some time in May.

Pennsylvania, Philadelphia. Record has been made of the sale of the two-story brick mill building, 57 by 80 ft., on East Willard St., near Frankford Ave., to Adolph Scholler, for the sum of $15,000. Mr. Scholler reports that this building will be equipped with the latest improved machinery for the dyeing and finishing of hosiery and skein yarns, making a specialty of aniline blacks (oxydized) and fancy colors; the plant to be run under the name of the Rex Dyeing and Finishing Co. (not incorporated), with Adolph Scholler as president and William Scholler, treasurer. Both of these parties are well known as experts in the art of dyeing hosiery and there is no doubt that much business will come their way when once the plant has started.

*Pennsylvania, Philadelphia. It is reported that the Hulton Dyeing & Finishing Co., dyers and finishers of woolen, worsted and cotton yarns and piece goods, are contemplating the installation of machinery for mercerizing cotton yarns.

*Pennsylvania, Philadelphia. The Dragon Dye Works, 3211-23 Amber St., dyers of fast blacks on hosiery and yarns, who have had in contemplation the installation of machinery for mercerizing purposes, report that the equipment has been received and is ready to set up. A new addition to the plant is almost completed in which coning machinery will be installed and which will be operated in conjunction with their mercerizing department.

Pennsylvania, Philadelphia. The Invincible Dye Works, dyers of fast black on hosiery at Trenton and Susquehanna Aves., whose business has been conducted by a trustee for the past year, has been shut down and its equipment sold out at public auction in order that the demands of creditors may be satisfied.

Pennsylvania, Philadelphia. The Niagara Thread Company, who have been located at 236 Chestnut Street, where they have been manufacturing a line of sewing threads and mercerized cottons, report that owing to their increasing business they have been compelled to remove their plant to 120-22-24 South American St., a few doors from their present location, where they have taken over almost the entire building and installed sufficient machinery to triple their capacity. The plant will be run by both steam and electric power.

*Rhode Island, Central Falls. The old building of the Royal Weaving Co. has been purchased by the Regina Lace Corp., recently reported incorporated at Providence with capital stock of $200,000. Emil J. Ozanne of the firm of Calderas & Ozanne, who have located a branch plant on Main St., Pawtucket, with main plant at Calais, France, is president of the Regina Lace Corp. Harold C. Whitman of the Esmond Mills is treasurer. It is said that 40 lace-making machines will be received from abroad during April and May.

Rhode Island, Warwick. Robt. Reoch of Phenix, Patrick H. Quinn, an attorney of Riverpoint, and Walter F. Earle, treasurer of the Harvard Trust Co. of Cambridge, Mass., have incorporated the Phenix Lace Mills with authorized capital stock of $275,000, $150,000 paid in. They are getting out plans now for the proposed plant and expect to have buildings completed and equipped before the end of the year. A cheaper grade of laces, including edgings and insertions, will be made. The company has organized with Mr. Reoch, president and Mr. Earle, treasurer.

FAILURES AND SUSPENSIONS.

North Carolina, Bessemer City. A receiver has been appointed for the Smith Cotton Mill Co. The plant has been shut down for several months.

FACTS AND GOSSIP.

Arkansas, Fort Smith. Geo. McNeall of Fayetteville, N. C., has been employed by local capitalists to organize a $250,000 cotton mill to contain 10,000 spindles.

Arkansas, Womble. Walter E. Womble and associates propose to develop water power and establish a cotton cloth or yarn mill. They are interested in particulars of equipment, etc.

*Colorado, Pueblo. The Farmers' Cooperative Coal Co., 95 Opera House Block, is interested in John H. Bearrup's plan to establish a woolen mill here.

Connecticut, Bridgeport. The new lace plant of Alb. & E. Henkels has begun manufacturing.

*Connecticut, Meriden. Ernest Kruse, the purchaser of the Meriden Woolen Co.'s property at the recent sale, is quoted as saying that the property will be resold within a short time.

*Connecticut, Mystic. The American Worsted Yarn Co. has failed to take over the factory building at Industrial Place as agreed and L. J. Coburn is considering taking steps to recover damages for failure to keep their agreement. This American Worsted Yarn Co. never was organized, we believe.

Connecticut, Waterford. The Thames Dyeing & Bleaching Co. has been incorporated with capital stock of $30,000.

Delaware, Dover. A charter has been granted the American Ramie Manufacturing Co., with a capital of $200,000. The incorporators of the company are David C. Munson and Bernard I. Kamen of New York and James M. Satterfield of Dover, Del.

Florida, Tallahassee. R. Griffin Johnson is interested with others in the organization of a company for the purpose of erecting a $50,000 cotton mill here.

Georgia, Atlanta. Wm. N. Randall is considering plans for building a cotton mill. He has not decided on the location or determined any details of the proposed plant.

Georgia, Atlanta. An involuntary petition in bankruptcy has been filed against the National Duck Mills. They operated 100 looms on cotton duck in leased quarters.

Georgia, Cornelia. An effort is being made to locate a cotton mill here. The people of this place are to raise $100,000 and the balance will be furnished by the promoters. A committee has been appointed to solicit subscriptions.

Georgia, Griffin. It is rumored that a new cotton mill will be established here.

Georgia, Griffin. W. J. Kincaid and J. M. Brawner, president and treasurer of the Griffin Mfg. Co., have sold their interests and retired from the company. The new officers are T. P. Nichols, president; Seaton Grantland, vice-president, and H. M. Barnes, secretary and treasurer.

*Georgia, Hartwell. The Beaver Dam Mfg. Mfg. Co., recently incorporated with capital stock of $125,000 to take over the Witham Cotton Mills, has organized with Bailey Fowler, president and treasurer; Albert Fowler, vice president, and John M. Wright, secretary.

Georgia, Monticello. J. L. Benton and M. R. Sears are promoting a project to locate a $300,000 cotton mill here.

*Indiana, Madison. The R. Johnson Yarn & Cordage Mills, recently incorporated with capital stock of $50,000 to succeed the company of the same name has organized with David Johnson, president; W. J. Johnson, treasurer, superintendent and buyer. Five thousand spindles are operated on twine and wicking.

Massachusetts, Boston. Mr. William B. Hayes, who for the past four years has had charge of the New England sizing business of H. A. Metz & Company, has become general manager of the Industrial Starch Company of Boston, Mass. This starch firm is the selling outlet in the textile trade for the specialized pure starches of the Huron Milling Company of Michigan. Mr. Hayes is well known in the sizing trade and is conservant with all questions related to the use of sizes and starches in the sizing and finishing trade.

Massachusetts, Clinton. The Lancaster Mills contemplate building a new mill on the south side of Greene St., 150 by 450 ft., 4 stories high, but it cannot be said that there is anything definite in this project as yet.

Massachusetts, Dedham. It is rumored a silk mill is to be established in East Dedham.

Massachusetts, Fall River. At a meeting of the Cotton Manufacturers' Association of Fall River it was voted to curtail production one day each week. The curtailment will be begun at once. This does not apply to the mills of M. C. D. Borden.

*Massachusetts, Holyoke. Buildings at the corner of South Summer and East Sts. are being removed to make room for the proposed new mill of the Goetz Silk Mfg. Co. to be erected this spring.

Massachusetts, Holyoke. The style of the Wm. Skinner Mfg. Co. has been changed to Wm. Skinner & Sons. In the statement filed with the Massachusetts Commissioner of Corporations, it stated that Wm. Skinner & Sons agree to pay the sum of $1,000,000 and assume all the outstanding debts of Wm. Skinner Mfg. Co.

*Pennsylvania, Philadelphia. The Hardwick & Magee Co. have recently taken over from the Ivins, Dietz & Magee Co. the carpet manufacturing plant of the latter concern, which it succeeds, at Lehigh Ave., Huntingdon, Marshall and 7th Sts.

*Pennsylvania, Reading. Arrangements have been made to equip the building vacated by the Steiner & Talcott Silk Co. with silk manufacturing equipment. Parties interested in this project are not known.

Mill News Continued on pages in Advertising Section.

Personals.

Matthew Allen has accepted the position as overseer of spinning at the Wyandotte Worsted Company, Waterville, Me. He was formerly employed at Gleasondale, Mass.

Henry M. Templeton has accepted the position as overseer of finishing at the Bound Brook Woolen Mills, Bound Brook, N. J., succeeding John McGuire, who resigned.

Geo. L. Pope, overseer of carding at the Knoxville Woolen Mills, Knoxville, Tenn., has severed his connection with that company.

Thomas T. Somerville has accepted the position as overseer of finishing at the Garland Mills, Staffordville, Conn. He was formerly employed at the Linn Woolen Company, Hartland, Me.

Thomas R. Webster has accepted the position as overseer of spinning at the Tilton Mills, Tilton, N. H. He was formerly employed at the Sawyer, Regan Company, Dalton, Mass.

F. J. Moore, overseer of finishing at J. A. Humphrey & Sons Company, Moncton, N. B., Canada, has severed his connection with that company.

J. F. Hamel, overseer of carding at the Danielson Cotton Company, Danielson, Conn., has resigned to accept a similar position at the Paul Whitin Mfg. Company, Northbridge, Mass. He is succeeded by M. L. Bennett of Moosup, Conn.

John M. Wheaton has accepted the position as overseer of weaving and dressing at the Army & Navy Cotton Duck Company, Wilkinsville, Mass. He comes from Lawrence, Mass.

Harry Longbottom, until recently wool buyer for the Cleveland Worsted Mills, Cleveland, Ohio, and previous to that time connected with S. Longbottom, manufacturer of worsted yarns at Philadelphia, has accepted the position of superintendent of the Hillsborough Mills, Wilton, N. H.

Sidney A. Anderton, superintendent and general manager of the Bellefont Webbing Company, Bellefont, R. I., has severed his connection with that company.

Jacob Clegg, for twelve years overseer of weaving at the Hope Company's mill at Phoenix, R. I., has severed his connection with that company to assume charge of the weaving department of the Ann & Hope Mills, Lonsdale, R. I.

Fred Evans, assistant foreman in the packing department at the Apponaug Company, Apponaug, R. I., has severed his connection with that company. He is succeeded by Thomas Lyon.

Amos Gee, overseer of the weave room at the Potomska Mills, New Bedford, Mass., has severed his connection with that company to accept a position as assistant superintendtnt of the Gosnold Mills, same city.

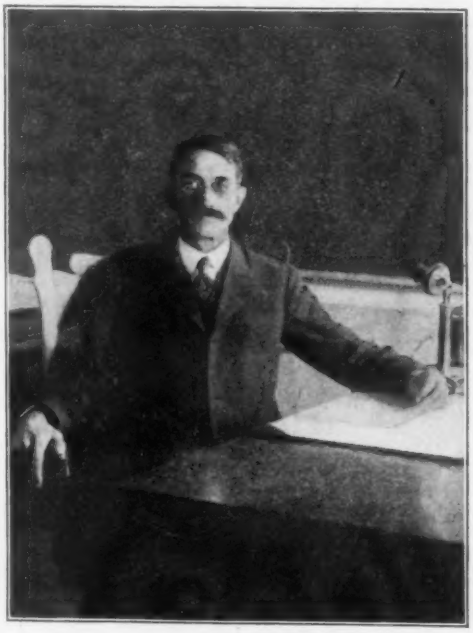
George Wilbur has accepted the position as machinist for the Fitchburg Yarn Company, Fitchburg, Mass. He comes from the Orswell Mills, same city.

W. M. Boyce has been elected secretary of the Akron Mfg. Company, Bessemer City, N. C.

Cleveland Nolan has been appointed overseer of weaving at the Lily Mills, Shelby, N. C.

E. Faulkner has accepted a position as overseer of weaving at the Siluria Cotton Mills, Siluria, Ala. He formerly held a similar position with the Barker Cotton Mills, Mobile, Ala.

T. R. Simpson has resigned as bookkeeper and shipping clerk with the Huss Mfg. Company, Bessemer City, N. C., to accept the position as overseer of beaming with the Locke Mills, of Concord, N. C.



R. W. EATON, AGENT, CABOT MANUFACTURING CO., BRUNSWICK, MAINE.

Wm. Johnson has been appointed general manager of the Manchester Cotton Mill, Manchester, Ga.

A. H. Robinson has been appointed superintendent of the Washington Mill, Fries, Va. He recently resigned as superintendent of the Pomona Mills, Greensboro, N. C.

F. C. Henderson has succeeded W. A. Smith as overseer of spinning at Opelika Cotton Mills, of Opelika, Ala. He comes from Columbus, Ga.

J. C. McCombs has accepted a position as over-

seer of spinning, spooling and warping with the Pomona Mills, Greensboro, N. C.

F. H. Smith has been promoted from second hand to overseer of mule carding and spinning at the Manetta Mills, Lando, S. C.

H. C. Worrells has accepted the position as master mechanic with the Hope Mills Mfg. Company, Hope Mills, N. C.

C. L. Oates has been appointed superintendent of the Delta Mill, McComb City, Miss. He formerly held the position of superintendent of the Charlotte Cotton Mills, Charlotte, N. C., but retion with that company to accept a similar position with the C. A. Root Company, Uxbridge, Mass.

Frank W. Emerson, superintendent of the Moosup Mills, American Woolen Company, Moosup, Conn., underwent a surgical operation in the Lawrence Hospital, but it is reported that the operation was successful.

James Ramsey has accepted the position as overseer of spinning at the Warrenton Woolen Company, Torrington, Conn., succeeding Thos. H. Fielding, who resigned.

THE SUPERINTENDENT AND OVERSEERS OF THE STERLING MILLS, LOWELL, MASS.

Standing—Goddard Carlson, Carl Erickson, William Hunter, Ivar S. Borg, Timothy Keefe, John Gallagher, James Burns. Sitting—F. A. Hardy, F. H. Swanton, A. L. Dunham, J. H. Gagan, R. P. White, C. H. Francis, George Underwood, A. D. Forbes, W. J. White, Dennis Dilworth.

cently resigned the position as assistant superintendent of the Dan River Mills, Danville, Va.

Jason P. Libby has accepted the position as overseer of finishing at the American Woolen Company's mill at Old Town, Me. He was formerly employed at No. Vassalboro, Me.

Frank R. Brown, overseer of finishing at the Garland Mills, Staffordville, Conn., has resigned to accept a similar position at the Ellis Mills, Monson, Mass.

Anthony Moore, general superintendent of the American Thread Company's mill at Holyoke, Mass., has severed his connection with that company. He is succeeded by Joseph Redford, who has been overseer of the preparation department at the Kerr Mills, American Thread Company, Fall River, Mass.

William E. Chamberlin, overseer of the finishing department at the R. I. Worsted Company, Stafford Springs, Conn., has severed his connec-

Michael H. Gaynor, overseer of carding at the Chicopee Mfg. Company, Chicopee Falls, Mass., died at his home, February 14, after a few days illness. He is survived by a wife and one son.

W. T. Butter has accepted the position of chief engineer and master mechanic at the Mary Leila Mills, Greensboro, Ga. He comes from Eatonton, Ga.

Arthur Goulet has accepted the position as overseer of ring spinning at the Hebron Mfg. Company, Hebronville, Mass. He was formerly employed at Taunton, Mass.

Harry Twigg, overseer of dyeing at Almonte, Ont., Canada, has accepted a similar position with Harris & Co., Rockwood, Ont.

R. A. Illingworth, superintendent of the Southgate Woolen Mills, Worcester, Mass., has severed his connection with that company. He has been appointed superintendent of the Woodside Mills, Northboro, Mass.

Morris G. Einstein, superintendent of the worsted weaving department of the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass., has severed his connection with that company.

J. S. Strowd has been appointed overseer of spinning at the Alberta Cotton Mill, Chapel Hill, N. C. Mr. Strowd graduated last May from the Textile Department of the A. & M. College of North Carolina.

Dever Little, late superintendent of the Gaffney Mfg. Company, Gaffney, S. C., has been appointed superintendent of the Republic Cotton Mill, Great Falls, S. C. These mills are being erected by the Messrs. Duke and there will be four large mills of which Mr. Little will be superintendent. Mr. Little is at present taking a special textile course at the Textile Department at the A. & M. College of North Carolina.

Eugene N. Foss, president of the Burgess Mills, Pawtucket, R. I., has tendered his resignation to give his entire attention to the Maverick Mills which is being erected at East Boston.

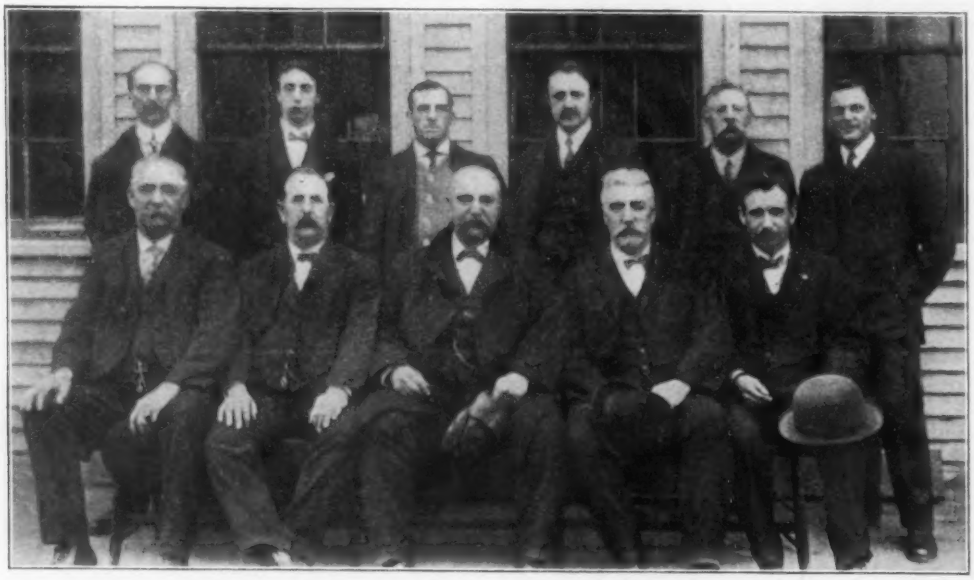
Thomas Igo has accepted the position as overseer of spinning at the Cocheco Woolen Mfg. Company, East Rochester, N. H., succeeding Geo. A. Elliott.

James Schofield, for the past 15 years connected with the N. E. Cotton Yarn Company, and superintendent of departments 7 and 8 of the Rotch Mills, New Bedford, Mass., has severed his connection with that company.

A. R. Eller has accepted the position as overseer of carding and spinning at the No. 1 Mill, China Grove, N. C. He comes from Mooresville, N. C.

J. P. McCraw, overseer of weaving at Waterboro, S. C., is to accept a position as overseer of weaving, slashing and drawing-in with the Saxe-Gothia Mills, Lexington, S. C.

John W. Doran, who was superintendent of the Lincoln Mfg. Company, Chester, Pa., has been appointed superintendent of the Bibb Mfg. Company, Columbus, Ga.



THE OVERSEERS OF THE GOODALL WORSTED MILLS, SANFORD, ME.

Top Row—Fred Stubbs, John Derham, Will Denby, Francis Moore, James Wright, James P. Denby. Bottom Row—Harry Mosley, Craven Sharp, Harry Heaton, Ed. Bacon, Bentley Aveyard.

W. H. Still has accepted a position as overseer of carding at Pineville, N. C. He comes from Greenville, S. C.

R. H. Long, overseer of spinning at the Peerless Cotton Mills, Lowell, N. C., has severed his connection with that company to accept a position as overseer of carding and spinning nights at Newton, N. C.

W. A. King, superintendent of the Bibb Mfg. Company, Columbus, Ga., has severed his connection with that company.

A. J. Blackwood has been appointed overseer of twisting and winding at the Longhurst Cotton Mill, Roxboro, N. C. He comes from Greensboro, N. C.

J. W. Kirkland has been appointed overseer of weaving at the Walterboro Cotton Mill, Walterboro, S. C.

Charles Upchurch, formerly of Laurinburg, N. C., has accepted the position as overseer of winding, spooling, twisting, reeling and spinning at McColl, S. C.

D. J. Williams, overseer of spinning at Mountain Island, N. C., has resigned to accept a similar position at the Lumberton Mills, Lumberton, N. C.

Frank Clarke has accepted the position as overseer of weaving at the Lydia Mills, Clinton, S. C.

Leonard H. Query has accepted the position as superintendent of the Savona Mf~ Company, Charlotte, N. C.

Joseph Glennon has accepted a position in charge of the fulling department at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass. He comes from the Assabet Mills, Maynard, Mass.

A. Tenny White, superintendent of the Manville Company, Manville, R. I., for the past 12 years, has severed his connection with that company.

Charles Gledhill has accepted the position as overseer of finishing at the R. I. Worsted Company, Stafford Springs, Conn. He comes from Providence, R. I.

Charles E. Quimby has accepted the position as overseer of weaving for Dexter, Richards & Sons

WHO ARE THEY?

This protograph shows a group of overseers and the superintendent in a New England mill. The group was photographed a few months ago by H. J. Broad for the Textile World Record. Death called Mr. Broad a few weeks later and the photograph of this group was found after his death, but without any memorandum of the mill or names of the men in the group. In publishing it now we ask those of our readers who may be acquainted with any of the men in the group to give us the information in order that we may publish it in our next issue.

Will Hope has been promoted from overseer of spinning to assistant superintendent at the Dan River Mills, Danville, Va.

George A. Draper of Hopedale, Mass., was appointed president of the Burgess Mills, Pawtucket, R. I., to succeed Eugene M. Foss at a meeting of the Board of Directors

Charles R. Newton, designer at the Warren Woolen Company, Stafford Springs, Conn., has given in his resignation to take effect March 1. He is to accept a position in the New York office of Deering, Milliken & Company.

Leon Locke, overseer of spinning at the Tilton Mills, Tilton, N. H., has severed his connection with that company.

Arthur J. Richard has been appointed superintendent of the No. 2 and 3 Mills of the American Thread Company, Holyoke, Mass. He was formerly assistant superintendent of the American Thread Company's plant at Willimantic, Conn.

Company, Newport, N. H. He was formerly employed at the Cocheco Mfg. Company, East Rochester, N. H.

H. C. Templeton has accepted the position as overseer of finishing at the Bay State Mills, Lowell, Mass. He was formerly employed at the Thistle Worsted Company, Elmville, Conn.

E. J. Shaughnessey has succeeded Robert A. Illingworth as superintendent of the Southgate Woolen Mills, Worcester, Mass.

Percy Walshaw has accepted the position as overseer of dyeing at the Marston Worsted Company, Skowhegan, Me., succeeding E. Thornton.

Francis C. Lewis, superintendent of Stephen, Sanford & Sons, manufacturers of Brussels and tapestry carpets at Amsterdam, N. Y., died at his home at the age of 45 years.

Charles Pickles has accepted the position as overseer of finishing at the Oneko Mills, New Bedford, Mass. He succeeds Thomas Battye, who resigned.

DEATHS.

Major Marion Moise, at one time president of the Sumter Cotton Mills and vice president of the Sumter Bank, of Sumter, S. C., committed suicide in the room of his law office in Sumter, January 30. No reason can be assigned for the act. He was apparently in good health and as far as can be learned no financial embarrassment could have led him to take his life. He was born June 24, 1855.

John McGill, a retired woolen manufacturer and one of the founders of the woolen firm of Wm. Wood & Company, 22d and Spring Garden Sts., Philadelphia, died at his home, 2036 Spring Garden St., in that city. He was born June 24, 1824.

Robert Beattie, president at the Beattie Carpet Mfg. Company, Little Falls, N. J., died at his home at the age of 68 years of Bright's disease. His death was a shock to his many friends, for while it was known that Mr. Beattie was very ill, it was hoped that he would recover. He is survived by a widow and two sons, Robert Beattie, Jr., who is assistant superintendent of the mill, and Frank K. Beattie, who is connected with a mechanical establishment in New York City.

Thomas C. Page, for many years closely identified with the manufacturing industries at Chicopee Falls, Mass., died recently in New York from the effects of an operation, at the age of 78 years. Mr. Page was born in Hollis, Me., and learned the machinist trade in Saco. He came to Holyoke in 1853 as a journeyman machinist and in several years opened a repair shop and accumulated a little money, so that he was able to buy an interest in the famous knitting machine invented by I. W. Lamb, which was the pioneer machine of this type. This investment was the foundation of Mr. Page's career as a manufacturer. The Lamb Knitting Machine Co. was organized with a capital of $200,000. Later on this business was merged with A. G. Spaulding & Co. of New York and other lines of manufacture added to it. The Stevens-Duryea Automobile Co. is an outgrowth of this concern and Mr. Page became assistant treasurer of the latter and continued in that capacity until his death. He was assistant treasurer of the Stevens Arms & Tool Co. for about ten years. Subsequently, the knitting machine branch of the business was reorganized into a separate company, which still continues to build the machines. Mr. Page was connected with many business and financial institutions of that section and actively interested in religious and Masonic organizations. He is survived by three sons.

C. N. Bagley has been appointed superintendent of the Sheridan Woolen Mills, Ashuelot, N. H. He was formerly employed at Quinebaug, Conn.

Frank Lewington, master mechanic at the American Woolen Company's mills at Pascoag and Harrisville, R. I., was instantly killed by falling ten feet from the top of a boiler to the concrete floor where he had been working on a valve at the top of the boiler. He was 54 years of age and a native of Westbury, England. Besides his wife he leaves one son, who is engaged as electrician in Albany, N. Y., his father and one sister, who reside in Chester, Pa.

Rubin J. Sykes, 33 years of age, died at his home on Bradley St., Putnam, Conn., after an illness which extended over a period of six months which resulted from a cancer. He was foreman of the finishing department at the Hammond & Knowlton Silk Mills of that city.

Edward M. Rockwell, manufacturer of merino and mixed yarns, who operated a mill at Leominster, Mass., died at his home at the age of 63 years. He is survived by a wife, two sons and two daughters.

William C. Lovering, who represented the 14th Massachusetts District since 1896, died recently in Washington. He had been engaged in cotton manufacturing nearly all his life and was a director and officer in many business enterprises. He was born in Woonsocket in 1835 and was taken by his parents to Taunton in 1837, where his father had just taken charge of the Whittenton Mills. He was himself identified with these mills for many years, later being president of that company. He had seen the Whittenton Mills grow from 120 looms to nearly 2,000. He was instrumental in building the Elizabeth Poole Mills and was one of its largest stockholders. He was also one of the charter members of the Canoe River Mills and in the Cohannet Mills, now branches of the N. E. Cotton Yarn Co. He has always been closely identified with the business interests of Taunton. He was at one time president of the Arkwright Club and the list of his official connections is a long one. In Congress his record has been a credit to himself and his State. He is survived by two daughters and a brother, Henry M. Lovering.

Three deaths in her family within two weeks have afflicted Mrs. Mary Binns, who is now the only surviving member of her immediate family. January 25 Mrs. Binns' husband, Leedham, president, treasurer and agent of the Binns Patent Band Company, 1842-46 Germantown Ave., Philadelphia, died from heart trouble, while eight days later her son, Charles, who was connected with his father as superintendent and manager of the same company, succumbed to pneumonia. Mrs. Binns had no more than realized her loss when her daughter, Edythe, died from pneumonia, after being ill only a few days. Miss Binns' funeral took place on Friday afternoon, the 11th, at 1 o'clock, at her mother's residence, 2235 North Broad St. Rev. Doward List, pastor of the Church of the Redemption, of which Miss Binn was a member, officiated. Interment was made at Mt. Moriah Cemetery.

Albert D. Smith, father of Robert Smith of the well known firm of Smith, Drum & Company, Philadelphia, died February 10. Mr. Smith was for forty years and until the time of his retirement a few years ago employed by H. W. Butterworth & Sons Company as superintendent of the Smith department. He was buried from his home, 2309 Tulip St., in Glenwood Cemetery.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

A Manuel of Dyeing; by Edmund Knecht, Christopher Rawson and Richard Loewenthal; The J. B. Lippincott Co., Philadelphia; two volumes, 902 pages, 6 by 9. Price $12.

This is the second edition of what is unquestionably in every sense of the word the best work on dyeing ever published in the English language. The first edition has been out of print for several years and the inability to obtain it has been a distinct loss to the textile trade. The present edition has been carefully revised and brought up to date to include descriptions of the latest dyeing machinery and processes. The scope of this comprehensive work is indicated by the following abstract of the table of contents: Part 1, Fibers, Coloring Matters and Mordants; The Dyeing Process; The Theory of Dyeing. Part 2, The Vegetable Fibers, Cotton, Flax, Linen, Hemp, Jute, China Grass, Other Vegetable Fibers. Part 3, Physical and Chemical Properties of Water; Water for Technical Purposes; Purification of Water.

As a reference book for the dyehouse as well as for the student this manuel of dyeing is invaluable. No proprietor of a dyehouse and no dyer can afford to be without a copy.

A Silk Directory (Agenda Des Soies et des Soieries); A. Rey & Co., 4, rue Gentil, Lyon France; 900 pages, 5 by 9 1/2. Price $3.

The 1910 edition of this directory has been carefully revised to conform to the present state of the industry and several new features have been added. While the directory is especially devoted to the French silk industry, it includes a valuable list of firms engaged in the lace, tulle, wool and cotton industries in France and other countries. The following is an abstract of the table of contents:

France: Chamber of Commerce, Conditioning Houses, Textile Associations, Trade in Raw Materials, Silk Merchants, Brokers, Power Weaving Mills, Silk Wastes, Artificial Silk, Ramie, Sewing Silk and Miscellaneous Manufacturers.

Questions for Cotton Spinning Students; Parts 1, 2 and 3; by James Winterbottom; John Heywood, Ltd., Manchester, England; 100 pages, 4 1/2 by 7. Price 50 cents.

The author of this book is a lecturer of cotton spinning at the Municipal School of Technology, Manchester, England. He has arranged the questions to conform to a regular system of study beginning with cotton culture and leading through the different processes up to, and including, spinning.

Textile Materials (Materialien der Textil-Industrie); by Prof. K. Fiedler; Dr. Max Jaenecke, Hannover, Germany; 240 pages, 4 1/2 by 7. Price $1.50.

The author gives in this volume a brief account of not only the raw materials of the textile industry, but also the materials in the various forms during the process of manufacturing. While the work is not by any means exhaustive, it contains a vast amount of useful information in a very small space, and is arranged for convenient reference to any subject desired, by aid of both a table of contents and an index.

Business Literature.

"A B C" Cone Fan; The American Blower Co., Detroit, Mich.

Bulletin No. 264 describes and illustrates the "A B C" cone fans. These fans are ordinarily used for exhausting air from buildings, but are sometimes employed as plenum fans, discharging into chambers from which ducts radiate.

"A B C" Steel-Plate Fans; The American Blower Co., Detroit, Mich.

Bulletin No. 263 describes and illustrates the "A B C" Steel-Plate Fans built by the American Blower Co.

"Detroit" Steam Traps; The American Blower Co., Detroit, Mich.

Bulletin No. 267 describes and illustrates the "Detroit" steam traps which this company sell for draining and drying apparatus of their own manufacture.

The Howard & Bullough American Machine Co. of Pawtucket, R. I.

A new illustrated catalogue of the Howard & Bullough machinery, which includes opening, picking, carding, drawing, roving, spinning, twisting and winding machinery, warpers and slashers. Each machine and important detail is illustrated by beautifully engraved cuts with full description of the features of each, and in connection with each machine are tables giving floor spaces, speeds, production tables, gearing diagrams, many rules and calculations, tables for numbering yarn, twist tables, belting and shafting tables, and other useful information of general interest. The book is of convenient size and handsomely bound in flexible leather covers.

A Complete Dye House in One Machine.

The Franklin Process Co., Providence, R. I., have issued an illustrated booklet, describing the Franklin process of dyeing cotton, wool and worsted yarns and raw stock. It answers all the questions that a manufacturer or dyer would be likely to think of, and the fine illustrations show the machine, the bobbins both full and empty, and describe the process, giving details as to production and advantages obtained through its use.

The Franklin Process Co. has a demonstration plant at 4 and 6 Blunt St., Providence, R. I., where they have complete facilities for dyeing and preparing yarns and raw stock by the Franklin process. Dyers and others will find this booklet of decided interest and are invited to send for a copy.

Power Transmission Machinery; Jones & Laughlin Steel Co., Pittsburg, Pa.; 269 pages, 4 1/2 by 7.

This is a well bound volume containing detailed description of the steel products turned out by the

Jones & Laughlin Steel Co. It is freely illustrated and arranged for ready reference, an excellent index being an aid in this respect. To buyers of shafting, pulleys and hangers and other steel products it will prove a very useful handbook.

Speed & Stephenson Assume Important New Agency.

J. B. Farrar & Sons, of Halifax, England, who rank among the leading builders of worsted machinery, have recently appointed Speed & Stephenson, 170 Summer St., Boston, Mass., sole agents in the United States and Canada, for their line, which includes gill boxes, drawing, roving, spinning, twisting and yarn finishing machinery.

Members of this firm are practical worsted manufacturers and have a thorough understanding of both ends of the business. With the addition of this important line, Speed & Stephenson's accounts now enable them to furnish complete equipment for worsted and woolen machinery, as they also represent the following concerns: John Dawson, Ltd., wool washing and carbonizing machines; John Hetherington & Sons, Ltd., improved worsted cards and mules and duplex woolen cards, woolen mules, fearnaughts, etc.; James Smith & Son, improved Noble combs and ball winders. These combs have been remarkably successful. It was only a few months ago that they were first brought out and illustrated in the New Machinery Department of this magazine and up to the present time we understand that over thirty have been sold.

Speed & Stephenson also are agents for David Sowden & Son, builders of looms for men's wear, dress goods, etc., dobbies and jacquard machines; Hearl Heaton & Sons, grinding tackle and emery fillet; S. Halley & Sons, Ltd., card clothing of every description; Wilson & Co., of Barnsley, spools and bobbins; Thomas Blackburn, spindle bands and tapes, while their line of mill supplies comprises all the requisites of the mill, including roller leather, combing aprons, etc. This concern also does a large business in second hand machinery. They have a shop at Lawrence, Mass., for repairing and remodeling, so that the second hand machinery that they offer is put in first class running order.

Wm. H. Knowles & Co., New Bedford, Mass.

The trade has just received an announcement, signed by Harry Widmayer, Jr., who is widely known both as a practical manufacturer and also on account of his six years' connection as general manager with the J. A. Gowdey Reed & Harness Mfg. Co. of Providence. The circular reads as follows:

"I herewith beg to inform you that I have severed my connection with the J. A. Gowdey Reed & Harness Mfg. Co. of Providence, R. I., and am now interested with Wm. H. Knowles & Co. of New Bedford, Mass.

"We have installed a complete reed manufacturing plant in connection with our roll covering factory, and are prepared to execute orders for reeds, either large or small, at short notice. The reed manufacturing department will be under my personal supervision and we guarantee satisfaction. I will call on you in the near future."

Steam Power.

The present tendency toward the generation of steam in large units is being exemplified by the Detroit Edison Co., who have just purchased four 13-retort Taylor stokers to be used with two 2300 horse power Stirling boilers. This large output from a single boiler is secured by double firing with a stoker at each end, each boiler having a furnace 26 by 15 ft. The Taylor stoker was selected because of its great overload capacity. So far as known by the American Ship Windlass Co., manufacturers of the Taylor, these are the largest stokers in the world.

Change in Philadelphia Office.

On March 1st the Philadelphia office of the Jenckes Knitting Machine Co. will be at 633 Arch St. They were formerly on North 6th St.

The "Universal" Exhibit.

At the coming exhibit of the Textile Exhibitors' Association, to be held in Mechanics Hall April 25-30, the Universal Winding Company intends making a display of the "Universal" system of winding, together with a few examples of its machinery in spaces 36-37.

Change of Headquarters.

The Union Mills and the Royal Gem Mills have moved from their old offices at 350 Broadway to the third floor at 377 Broadway, corner of White St., New York.

C. J. Root Co.

The counting machines for different uses in the textile trade, which are manufactured by the C. J. Root Co., Bristol, Conn., are being shipped to all parts of the country. The business of this concern has increased so steadily that they have been compelled to add to their manufacturing facilities and will soon be in a position to cope with the growing demand for their counters. Their line includes quite a variety of counters for different purposes.

Frank B. Gilbreth, Incorporated.

The contract for the construction of the power development on the Etowah river, near Creighton, Ga., for the Blue Ridge Power Company, has been secured by Frank B. Gilbreth, Inc., 60 Broadway, New York.

This work will include the construction of a Ransom hollow dam, 42 feet high and 600 feet long, and a reinforced concrete power house sufficient for 4,000 h. p. installed.

Union Special Machine Co. Changes New York Office.

The Union Special Machine Co., whose office was damaged by water in the recent fire at 47 Leonard St., New York, have taken the whole floor at 63-65 Bleecker St., just off Broadway, where commodious offices, show rooms and repair shop have been fitted up.

Sutcliffe & Co.

This firm of wool dealers announce that they have removed to more extensive and convenient quarters at 263 Summer St., where they will be pleased to see or hear from their customers.

Acme Steel Goods Co. Take Larger Quarters.

The Acme Steel Goods Company of 2834-2840 Archer Ave., Chicago, have found it necessary, in order that they may have larger quarters for the better accommodation of their trade in warehousing and shipping facilities, and to be able to give prompt and careful consideration of all orders, to take larger quarters in New York City at 151 Lafayette St. and in Atlanta, Ga., at West Alabama St. and Madison Ave.

Hygrosso Installations.

Among the recent orders for installations received for the Hygrosso humidifier system, manufactured by John W. Fries, 45 Lafayette St., New York, we note the following:

The Colonial Mfg. Co., Philadelphia, for their weaving department, the Nims Mfg. Co., Mount Holly, N. C., have placed an order for an equipment to consist of motor-driven Hygrosso; W. A. Lush Silk Co., Mt. Holly, N. C.; the Albion Cotton Mills, Mt. Holly, N. C.; Mt. Holly Cotton Mills, Mt. Holly, N. C., and the Stanley Creek Cotton Mills, Stanley Creek, N. C., have also installed this system.

A Klipstein & Co's. Office Building Burned.

A disastrous fire completely destroyed the office building occupied by A. Klipstein & Co., at 122 Pearl St., New York, which naturally upset the routine of their business for a few days. Arrangements were at once made for temporary offices in the Beaver Building at 129 Pearl St. They are now ready to give their usual prompt and careful attention to all inquiries and orders.

Improvements in Woolen Finishing.

The numerous orders received by L. H. A. Schwartz & Co., 713 Exchange Bldg., Boston, Mass., for woolen finishing machinery, is evidence of the merit of the Schwartz specialties and of the efforts now being made by woolen manufacturers to keep their finishing equipment up to date. Recent orders for the single bed rotary cloth press come from such companies as the Ayer Mills and Wood Worsted Mills, Lawrence, Mass.; the Riverside Mills, Providence, R. I.; the Botany Worsted Mills, Passaic, N. J., and the Bay State Mills, Lowell, Mass.

The claims made for this press include increased production, reduction of stretch, more uniform pressing, and a better handle of the cloth. The orders named above have been placed after these claims have been verified.

The Sutton Mills, North Andover, and the Botany Mills, Passaic, have recently installed Klug dry decatizing outfits, supplied by L. H. A. Schwartz & Co., who also have an order for a Klug outfit to be placed in the Ayer Mill.

Woolen and worsted manufacturers generally now realize that decatizing is essential to the proper finishing of their fabrics. This is shown by both the new and repeat orders received for decatizing apparatus by L. H. A. Schwartz & Co. The clothing trade are insisting more strenuously than ever before upon having spot and cockle-proof goods thoroughly shrunk, and the Klug process is designed to accomplish this in one operation.

Presentation of Loving Cup.

A complimentary dinner was given at the Hotel Astor, New York, on the evening of March 10, by the managers of the Silk Association of America to Col. Chas. F. Homer, for the past eleven years treasurer of the Association. In a happy speech Mr. Skinner, president of the Association, presented a large silver loving cup to Col. Homer in behalf of his associates, in recognition of the many valuable services he has rendered to the Association. Then followed a vaudeville entertainment by talent from some of the leading theatres.

High Priced Labor in the South.

(From Our Special Correspondent.)

The textile labor market of the South will probably experience conditions this year, 1910, somewhat similar to those which prevailed several years ago when there was a large exodus of mill workers to the cotton fields. The high price received for cotton the past season has tempered the ambition of operatives, overseers, superintendents and even mill presidents in some instances, to such an extent that a certain amount of unrest has developed, so that no one need be surprised if the previous conditions are seen again this year. Manufacturers should look into this matter and endeavor to check the movement before it reaches widespread proportions and cripples production as it did in 1906, when there was a general scramble to obtain help of any kind and no questions asked.

The remedy for the impending evil is educating a certain class of workers to the difference between the essential and nonessential things of life. In the past this class of operatives, at the first sign of high priced cotton have jumped for the plantations and carried their families with them. They rent a cotton patch and figure up the number of bales before they are even planted or harvested. This will return so much cash in their estimation. No living expenses to pay. Can raise enough garden truck to live, except for a barrel of flour, a hog or two, and may be a cow, and there they are—in clover so to speak. This sounds good, but how about the fertilizer and the plantation store which sells stuff on credit and whose chief aim is to please just such "growers" as these. How many of these operatives ever come away from their summer's outing with any money? Precious few, and in fact, most of them return to the mill work in debt to the plantation owner and the mill has lost their services for that length of time.

Recent Textile Patents.

Textile Patents.

BOBBIN SUPPORT. 947,465. James O. Wade, Elon College, N. C.

CARDING MACHINE. 949,271. John J. Henderson, Cordaville, Mass.

COTTON PICKING Machine. 948,619. Stephen S. Thomas, Gulport, Miss.

DECORATED FABRIC. 947,814. Joseph A. Groebli, New York.

KNITTING MACHINES. Splicing Feed Device for. 947,925. George S. Marville, Riegelsville, Pa.

LOOM DOBBY. 949,238. Karl Kuttruff and Johann Frefel, Basel, Switzerland.

LOOM. Haircloth. 948,370. George S. Cox, Fitzwatertown, Pa.

LOOM SHUTTLE. Haircloth. 948,415. George S. Cox, Fitzwatertown, Pa.

LOOM SHUTTLE. 947,523. Daniel H. Beaird, Alabama City, Ala.

LOOM for Weaving. Shuttleless. 948,945. Edward Smith, Bradford, England.

LOOM SHUTTLE. Cotton. 947,830. Valerie Leveque, Fall River, Mass.

LOOM for Weaving Tufted Pile Fabrics. 947,765. Robert Simpson, Glasgow, Scotland.

LOOM. Weft Replenishing. 948,568. Horace Wyman, Worcester, Mass.

LOOM SHUTTLE Box Motion. 949,355. Albert A. Gordon, Jr., Worcester, Mass.

LOOM STOP Motion. 949,365. Peter E. Provost, Fisherville, Mass.

LOOM. 949,629. James E. Goodwin, Cumberland Gap, Tenn.

LOOM RACK Adjustment. 949,579. Solomon Kendrick, Rochester, N. Y.

LOOM TAKE-UP Mechanism. 948,024. Alonzo E. Rhoades, Hopedale, Mass.

LOOMS. Weft Carrier for Needle. 949,706. James P. Humphries, Kidderminster, England.

MILL SPINDLE. Grinding. 947,953. Arthur M. Tully, Arran, Fla.

PILE FABRIC and Weaving the Same. 948,384. Matthew J. Whittall, Worcester, Mass.

SEWING MACHINE Combination Pressure Foot and Trimming Attachment. 947,506. Isidor Weinbach and Maximillian Stuhler, Brooklyn, N. Y.

SEWING MACHINE Guard. 947,651. Leon Schreiber, Cleveland, O.

SPINNING FRAMES. Builder Motion in. 949,399. Joseph F. Muheim, Warren, Mass.

SPINNING APPARATUS. Yarn. 949,733. James P. O'Connell, Crompton, R. I.

SPINNING MACHINE Doffer Guard. 948,650. Rufus S. Matteson, Providence, R. I.

SEWING MACHINE Needle. 947,484. Joseph French, Woonsocket, R. I.

SPOOL. 948,430. Clarence Omeliah, New York.

WELDED FABRIC. 949,668. Charles Swinscoe, Clinton, Mass.

WINDING FRAMES. Measuring and Thread-cutting Device for. 949,171. Moritz Ebeling, Jr., Barmen, Germany.

WINDING MACHINE. Yarn. 948,320. Henry S. Golland, Manchester, England.

Recent Textile Trade Marks Registered.

"The Greatest Stores of the World." Men's and boys' clothing. John Wanamaker, Philadelphia, Pa.

"Countess." Mercerized nainsook. A. L. Reid & Co., New York.

"Iris." Ladies' and misses' coats and suits. John V. Farwell & Co., Chicago, Ill.

"Bongo." Silk piece goods. Rogers & Thompson, West New York, N. J.

"Duo-Lastic." Knitted underwear. High Rock Knitting Co., Philmont, N. Y.

"Plexo." Embroidery silks. Belding Bros. & Co., Vernon, Conn.

"NB." Men's undershirts. Neustadter Bros., San Francisco, Cal.

"Progress." Dress and work shirts. Rauh Bros. & Co., Pittsburg, Pa.

"Silvereine." Handkerchiefs. Brown Durrell Co., Boston, Mass.

"Foster's Famous Factory." Shirt waists. Camuel M. Foster Co., Fort Wayne, Ind.

"Walkover." Hosiery. A. B. Andrews Co., New York.

"Tobralco." Cotton piece goods. Tootal Broadhurst Lee Co., Ltd., Manchester, England.

"Rose of Sharon." Wool blankets. The Pittsburg Dry Goods Co., Pittsburg, Pa.

"Flaxina." Handkerchiefs. Ottenheimer & Co., Chicago, Ill.

"Indo-Chi-Am." Cotton blankets. German-American Co., Draper, N. C.

"World Beater." Men's and youths' vests and trousers. The Isaac Faller's, Cincinnati, O.

"Trufico." Ladies' underwear. The Truefitte Underwear Co., New York.

"Toko." Silk piece goods. Susquehanna Silk Mills, New York.

"Facto." Silk piece goods. Susquehanna Silk Mills, New York.

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*New York, Niagara Falls. Contrary to numerous reports, the Visor Knitting Co. has not shut down. The plant is being operated on full time while a reorganization of the company is in progress.

New York, Utica. It is reported that a new knitting mill to specialize on women's knit wear will be started here. The names of interested parties have not been learned.

North Carolina, Chapel Hill. The T. F. Lloyd Mfg. Co. has been incorporated with capital stock of $200.000 by T. F. Lloyd, Isaac W. Pritchard, W. S. Robinson and L. O. Lloyd. T. F. Lloyd formerly operated the Alberta Cotton Mill, which has been taken over by the Durham Hosiery Mills. Mr. Pritchard was treasurer of the Blanche Hosiery Mills of Chapel Hill, which were also taken over by the Durham Hosiery Mills.

*North Carolina, Concord. The report is true that Young-Hartsell Mills Co. contemplates the addition of a weaving department to use the present production of yarns, but the matter is not definitely decided at this date.

Mercerizing Machinery

for

Piece Goods

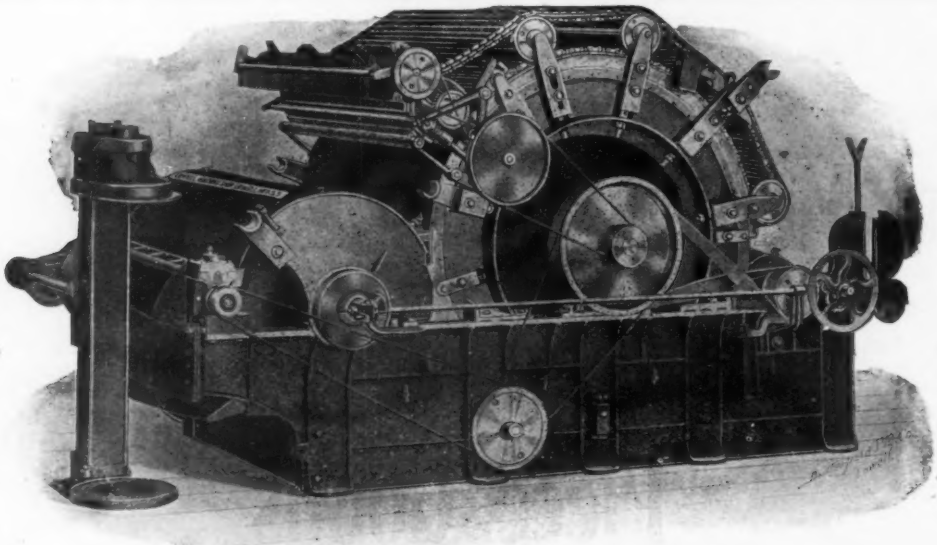
and

Warps

H. W. Butterworth & Sons Co.

Philadelphia, Pa.

Providence Office, Room 417, Industrial Trust Building



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

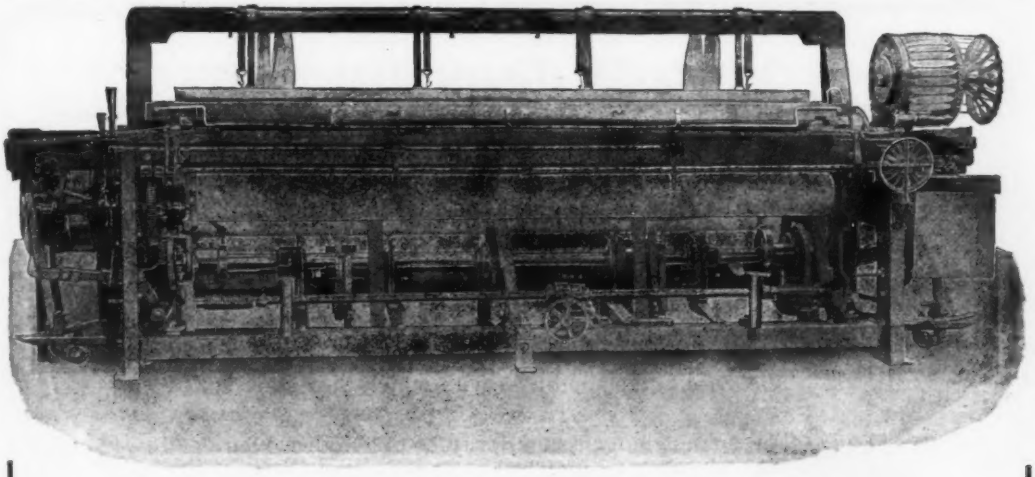
Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.



The Continued Success of the Textile Industry

in this country depends upon the adoption of the most improved labor-saving machines so as to compete with foreign products made by help working longer hours and paid much less wages per day. Such machinery works to the mutual advantage of mill owners and operatives.

In this line the Northrop Loom is in a class by itself

Our August shipments of over 2200 Northrop Looms included a distribution among states embracing Maine to California in longitude, and Vermont to Georgia in latitude.

Draper Company

Hopedale, Mass.

J. D. Cloudman, Southern Agent, 40 So. Forsyth Street, Atlanta, Ga.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

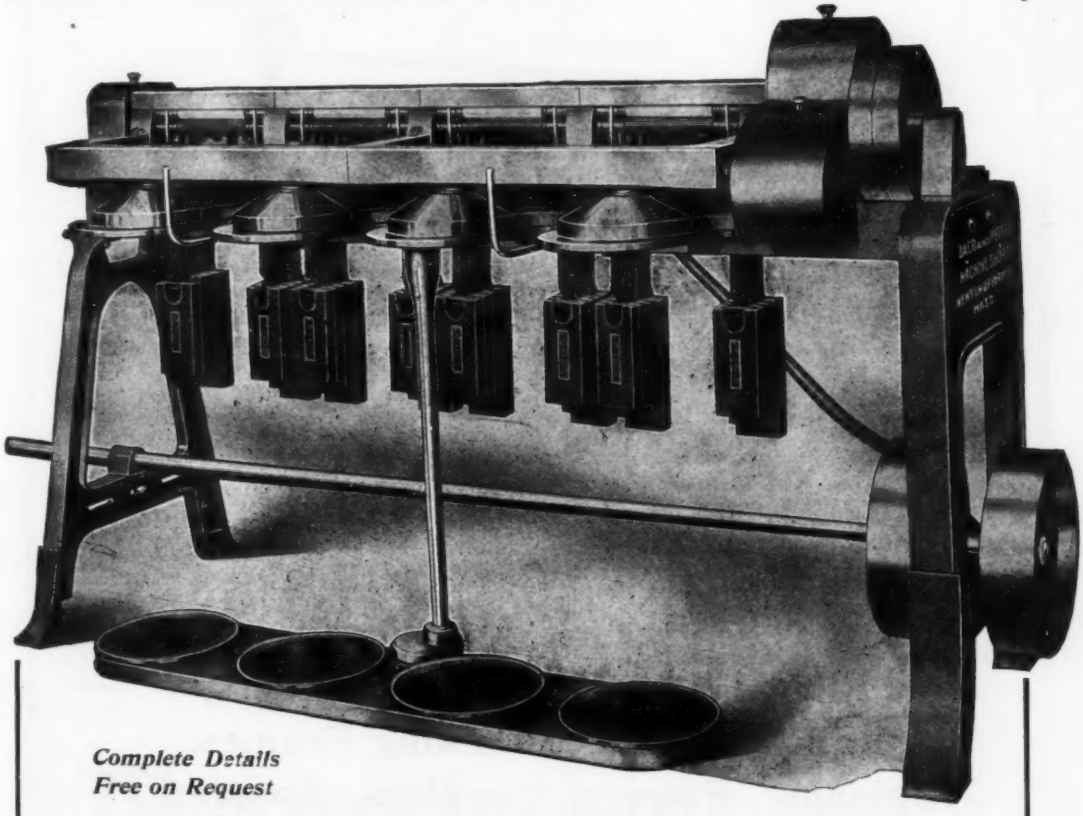
The Stafford Company

Readville, Mass.

THIS PATENT IMPROVED DRAWING FRAME

INCREASES THE PRODUCTION and DECREASES THE WASTE

IT can do this because (although very simple, and therefore durable and easily handled) it embodies many new and exclusive improvements in Roller Stands, Patent Head End Gear Stands, Patent Improved Calender Rolls. Patent Sectional Coiler Gear Covers, Patent Improved Stop Motion Spoons, Patent Calender Roll Cover, Patent Top Clearer, etc. It is adapted to various lengths of staple and delivers sliver *without kinks* or *bunches* and coils it *uniformerly* in cans.



Complete Details Free on Request

Saco and Pettee Machine Shops

Works at Newton Upper Falls, Mass. and Biddeford, Me., U. S. A.

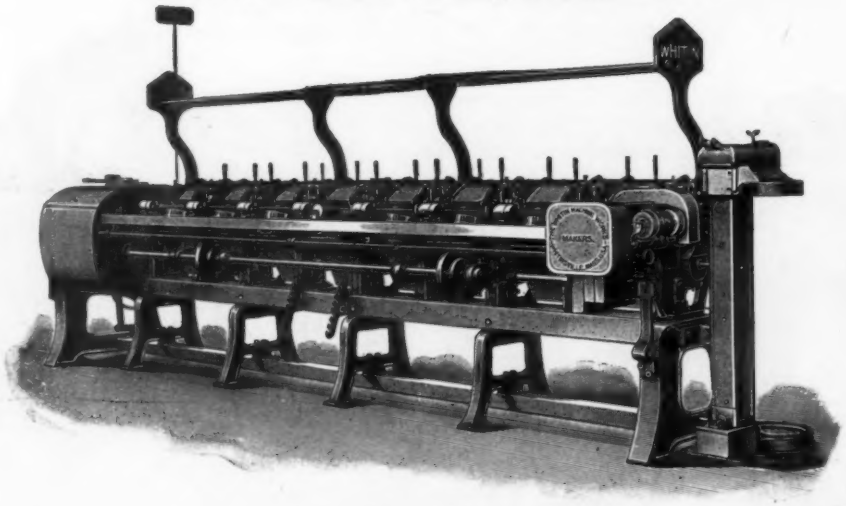
Southern Agent, A. H. Washburn, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

The entire hose or stocking made and put together on one machine

That is what our automatic hosiery machine does; makes the foot and the rib-top on half-hose —or tucked-top on ladies' stockings—all together; and turns out this hosiery in strings by the yard or the mile.

6 1-2 dozen pairs of half-hose per day are made on a 136-needle machine. The machine is built in guages, from the coarsest up to and including 220 needles—3 3-4 One operator can attend to 15 or 16 machines. And one adjuster or fixer can look after 100.

All that is left to do then is to cut the hose apart and loop the toes on any looper.

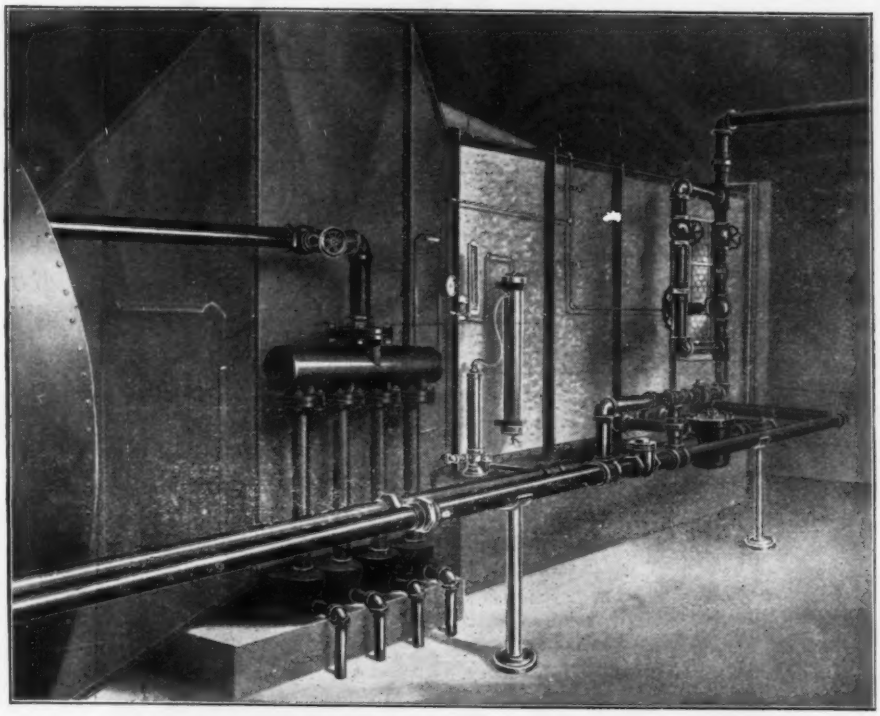
No skilled topper is needed. You save that labor-cost. And the work goes on as you want it, independent of the skilled operator.

If you are interested, we would like to give you a few figures showing the profit and advantage of these machines.

Scott & Williams

Machinery for knitting mills.

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.



The Carrier System

Humidifying, Cooling, Heating

—with—

Automatic Humidity and Temperature Control

The System that is guaranteed to give the results in all weather conditions. *Write for Catalog.*

Carrier Air Conditioning Co.
of America

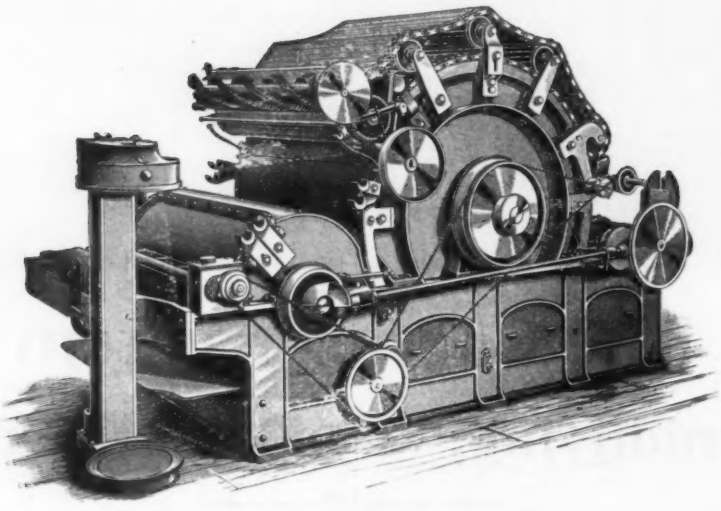
39 Cortlandt Street, (145-C) **New York**

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

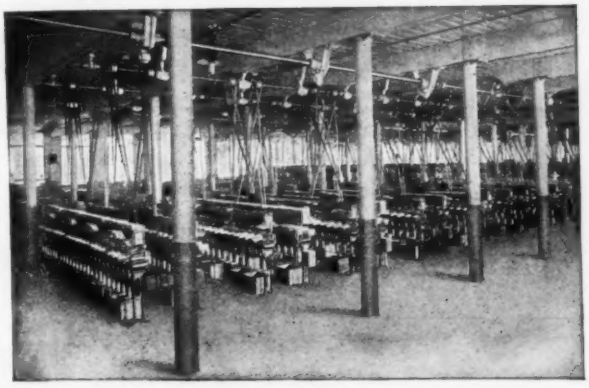
INCLUDING

Plain and Fancy Silk Looms

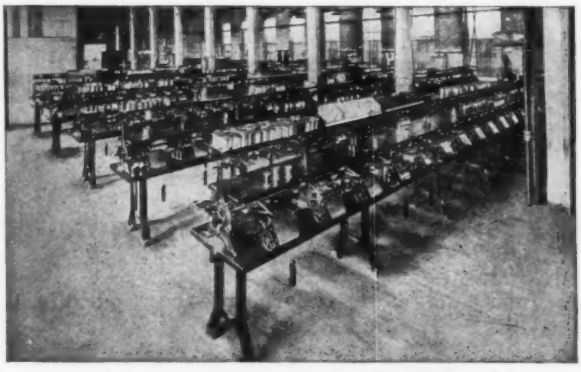
Winding room of a modern 75000 spindle cotton yarn mill using

No 50 "UNIVERSALS"

exclusively for coning, tubing and doubling.



UNIVERSAL WINDING



No. 10 "UNIVERSAL"

Loom Cop Winders in a Prominent Silk ribbon mill.

COMPANY - BOSTON

No. 90 "UNIVERSALS"

Installed for Winding Cotton-filling.

IMPORTANT ANNOUNCEMENT

Manufacturers are hereby warned against using infringements upon the Cramer patents for

Automatic Regulators for Humidifying Systems

Before considering the purchase of infringing devices, make sure that the vendor is amply financially responsible and guarantees to imdemnify the purchaser against loss by damage suits, for both infringers and users of infringements, however crude such infringements may be, will be prosecuted to the full extent of the law.

Don't be imposed upon by misleading terms and claims as to what the vendor's patents cover; anyone can get a patent for almost anything in the way of specific constructions; the vital question is whether or not such patents infringe other prior patents.

Cramer System of Air Conditioning

Spray Humidifiers as good as the best, of large capacity, durable, sanitary, air cleansing and efficient.

Air Conditioners *comprising all the good points of spray humidifiers*, particularly as to large moistening capacity and simplicity; *combined with the good points of evaporation types of humidifiers*, such as complete evaporation of the moisture, large air cleansing capacity and good distribution; *and without the objectionable features of either type*, such as wetting down, localized moistening, large and clumsy constructions, unsanitary conditions due to difficulty of access for cleaning and to the use of wet absorbent disease-breeding materials, and largely reduced efficiencies at all except the lowest humidities,—*features*, simplicity, durability comprising only seamless drawn sheet copper casings, a spray nozzle and a fan. The fans are either electrical driven, or mechanically driven with belts or ropes as the special requirements of each case dictate.

STUART W. CRAMER

Providence, R. I. **Charlotte, N. C.** **Atlanta, Ga.**

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SONS,
Card Clothing for Woolen and Worsted.

WILSON BROS. BOBBIN CO.'S.

Bobbins, Shuttles, etc.

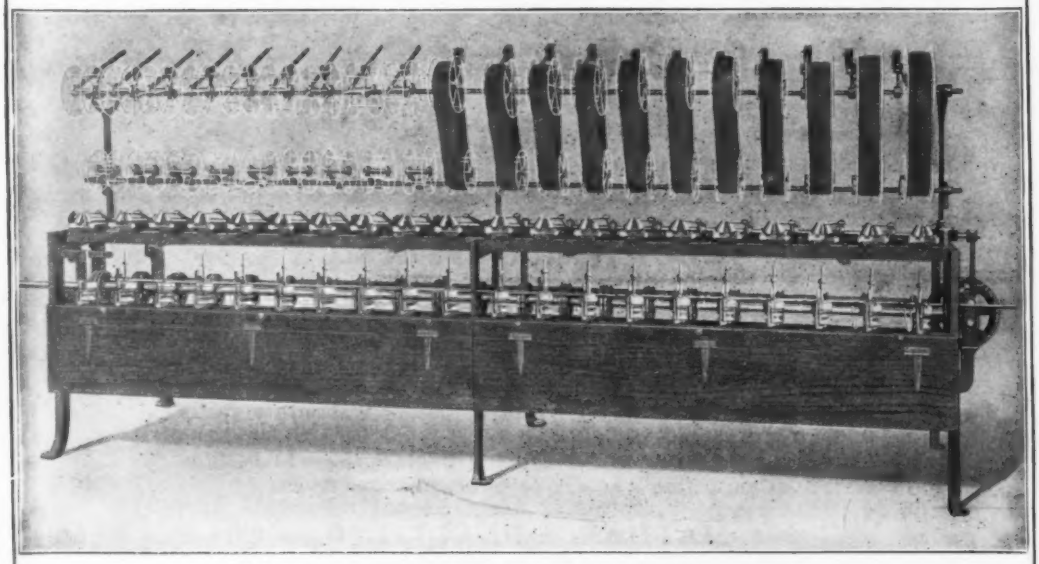
Dronsfield Bros. Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

OSWALD LEVER CO.

(Formerly LEVER & GRUNDY.)

MANUFACTURERS OF TEXTILE MACHINERY

SOLE MAKERS OF OUR PATENTED SPECIALTIES
IN THE UNITED STATES



High Speed Cross Quiller to wind from skeins, spools or mule cops onto quills or paper tubes. It is built to run from 1800 to 2400 revolutions.

Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mill, Beaming Machines, etc.; Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machine for silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA.

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Piece Dye Kettle. *Bulletin 53*

The Hunter PIECE DYE KETTLE

A machine that produces results.

No Shading or Uneven Dyeing.

Tank made of 3" CLEAR CYPRESS.

Tongued and Grooved and thoroughly boltcd.

IMPROVED HUMP REEL

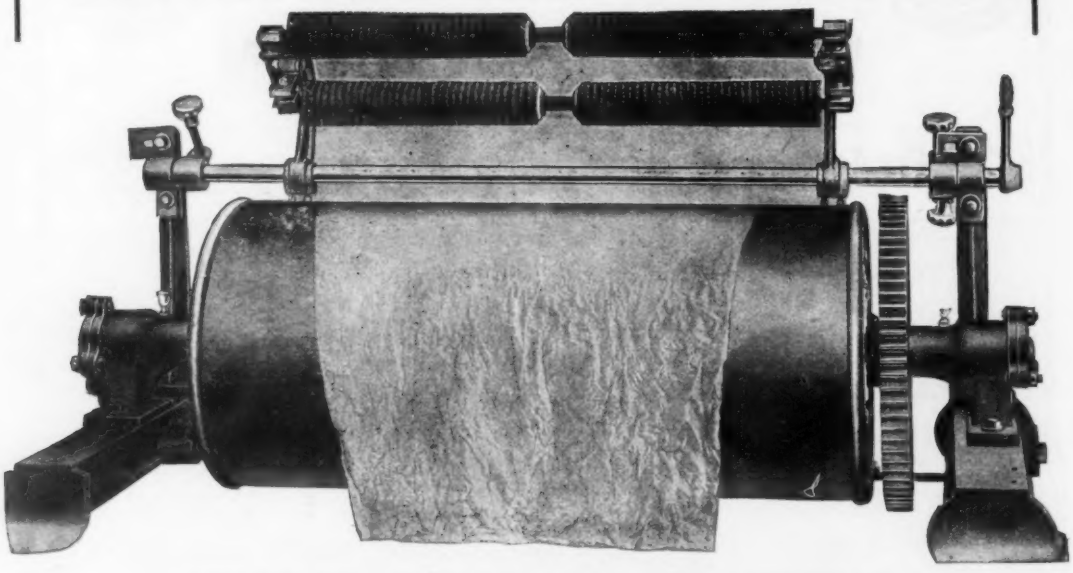
FRICTION PULLEY DRIVE

The heaviest, most substantial dye kettle built.

Any size for any number of strings.

Send for Bulletin No. 53.

THE BRISTLE CLOTH STRETCHER



Double Brush Machine attached to top of can. Showing our attachment for holding the stretcher off the cans when not in use.

The New Principle for Stretching Cloth

Holds the Cloth Out Smooth

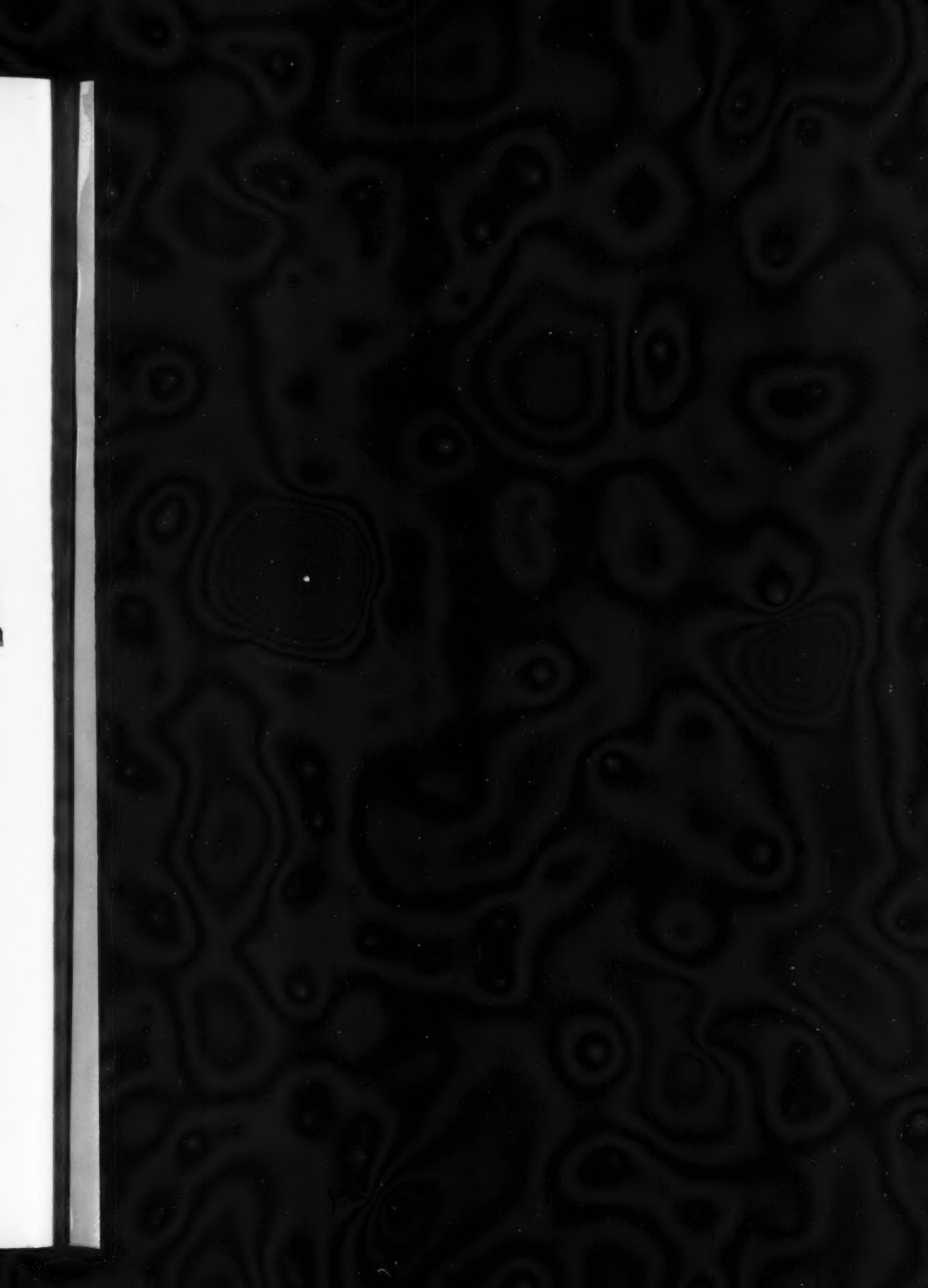
Any Degree of Stretch May be Obtained.
Stretches Starched or Unstarched Goods.
May Be Applied to any Part of the Cans.
Stretches from the Centre Toward the Selvedge.
No Threading Up of Machine Required.
Prevents Wrinkles in Silk Printing.
Smooths and Stretches Cloth Before Calanders.
Adds a Superior Finish to the Goods.
No Injury to Employees Possible.
Indestructible Brush Holders.
Sold on Approval.

The Large Mills Are Using Them—Let Us Help You

American Finishing Machinery Co.

141 Milk Street, Boston, Mass.

4 Cannon Street, Manchester, England



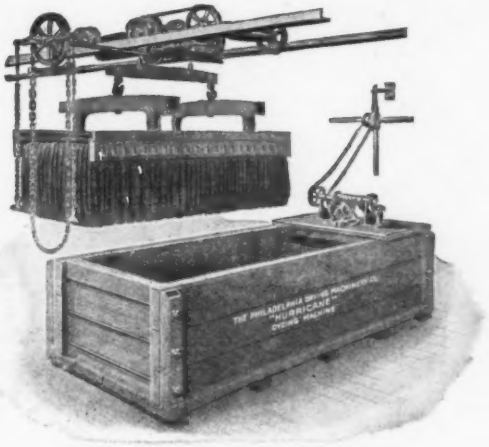
DYEING

Machinery for Yarn, Hosiery, etc.

You can SAVE

by our "HURRICANE" System

75% in labor
50% " steam
35% " dyes



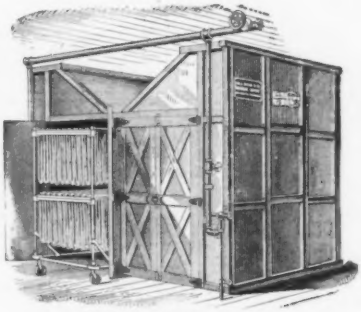
SKEIN DYEING MACHINE.

DRYING

Machinery

FOR

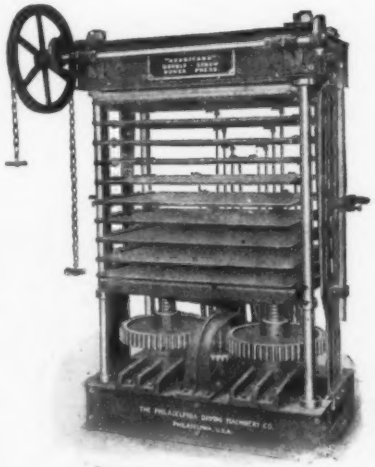
Raw Stock
Skein Yarn
Knit Goods
Cloth, etc.



TRUCK YARN DRYER.

COMPLETE EQUIPMENTS

For Bleaching
Scouring
Carbonizing
Singeing



PRESS FOR HOT AND COLD FINISHING.

Power Screw and Hydraulic

PRESSES

For Hot or Cold Finishing.

The Philadelphia Drying Machinery Co.

6721 Germantown Avenue
Philadelphia, Pa.

Equipment

The principal part of every equipment is the belting you use, for that is where your power plant expense shows the greatest differences and where it is possible to gradually improve its condition by adding a **Schieren's "Duxbak" Waterproof Leather Belt** whenever a new belt is needed.

Schieren's "Duxbak" Waterproof Leather Belting

saves power to a greater extent than you may think possible and lasts so much longer than other beltings that its real cost amounts to nothing.

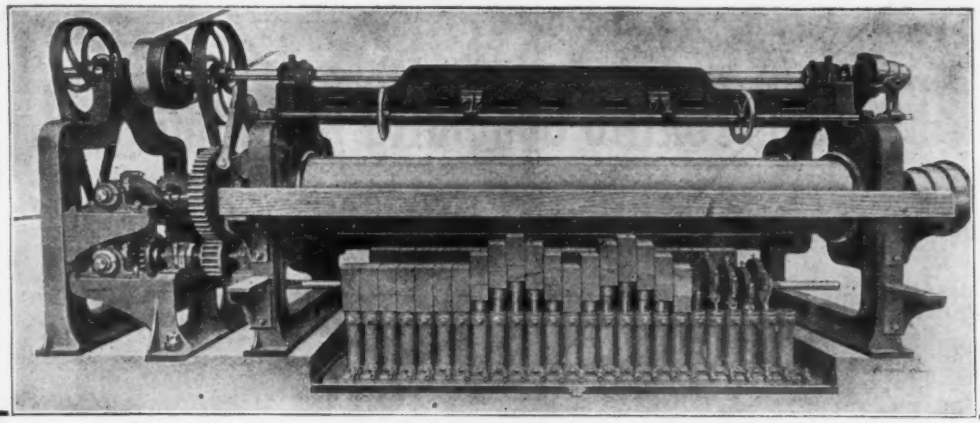
All statements made in SCHIEREN advertisements are true and will be backed up by a "Return your Money if not satisfied" Guarantee

Chas. A. Schieren Company
ESTABLISHED 1868

TANNERS
BELT MANUFACTURERS

New York..... 29 Ferry Street
Boston, 641-3 Atlantic Avenue, Opp. South Station
Philadelphia, ... 226 No. Third Street

Chicago, 84-86-88 Franklin St. Pittsburg, 205 Wood St. Denver, 1752 Arapahoe St. Brooklyn, N. Y., Cor. 13th St. and Third Ave. Hamburg, Germany, Auf dem Sande 1. OAK LEATHER TANNERIES, Bristol, Tenn.



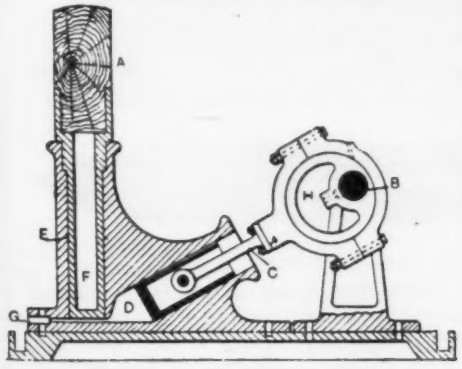
(Showing Two Rows of Beetles Operated From the Same Set of Eccentrics)

A PNEUMATIC BEETLING MACHINE THAT INCREASES PRODUCTION 300%

Besides this gain in output as compared with old style beetles this machine gives the goods a much better finish, for the force of the beetles' blow is easily regulated to suit different fabrics and finishes. (The beetles are below the cloth beam.)

As there is no waste of power, no springs or delicate parts to keep in order, and the blocks are easily renewed, the cost of maintainence is greatly reduced.

Showing How It Works



When the machine starts the eccentric H, on shaft B, the connecting rod C, reciprocates, and the air in the cylinder D, is compressed and forced into the cylinder E, thus driving the friction F, rapidly upward causing the beetling block to strike a quick and heavy blow on the fabric.

Send for full details

Thos. Leyland & Co.,

F. T. WALSH, Manager

60 India St., BOSTON, MASS.

Proof of Its Economy

Comparative English data relating to pneumatic beetles, compared with ordinary faller beetles, on ordinary average bleachworks cloth. Equal finish guaranteed. Cost per piece treated (240 yds.).—

	Pneumatic Beetle	Ordinary Faller Beetle
Wages. Estimating one attendant at $7.50 per week (56 hours) on faller beetle would deliver 155 pcs. (240 yds.) on pneumatic 504 pieces (240 yds.)	$.01428	$.04644
Maintenance: Estimating for faller beetle $1.00 per week for fallers and tappets and $1.00 for fitting with 50c. for wear and tear of heavy gearing = $130 per ann. against pneumatic no timber (practically), 3 times quantity of oil, light wear and tear, say $65	.00240	.01548
Power: Estimating 10 h. p. for faller beetle and 12 for pneumatic beetle and 3 lbs. per h. p. at $2.50 per ton, faller beetle 1,680 lbs. for 155 pieces (240 yds.), pneumatic 2,016 lbs. for 504 pcs. (240 yds.)	.00400	.01082
Sundries	.00508	.00724
Total cost per piece treated. Reduced cost per piece treated 67 per cent.	$.02576	$.07998

American Textile Specialty Machinery Co.

670 Eddy St., Providence, R. I.

MANUFACTURERS OF

SHUTTLES AND SHUTTLE IRONS

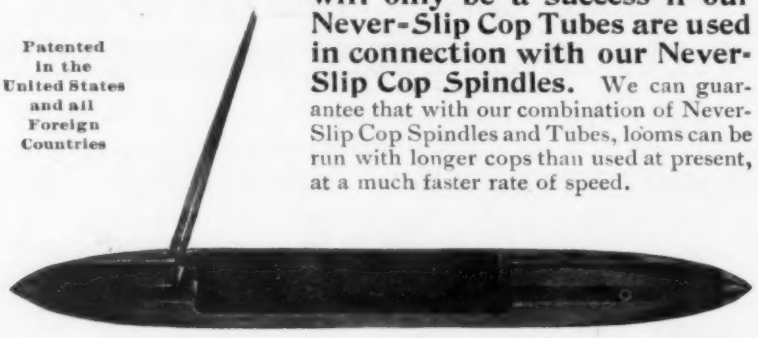
FOR ALL TEXTILE PURPOSES

Never-Slip Cop Tube

Patent applied for.

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed.

Patented in the United States and all Foreign Countries



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

Shuttle with Spindle Lowered

U. S. Patents; 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

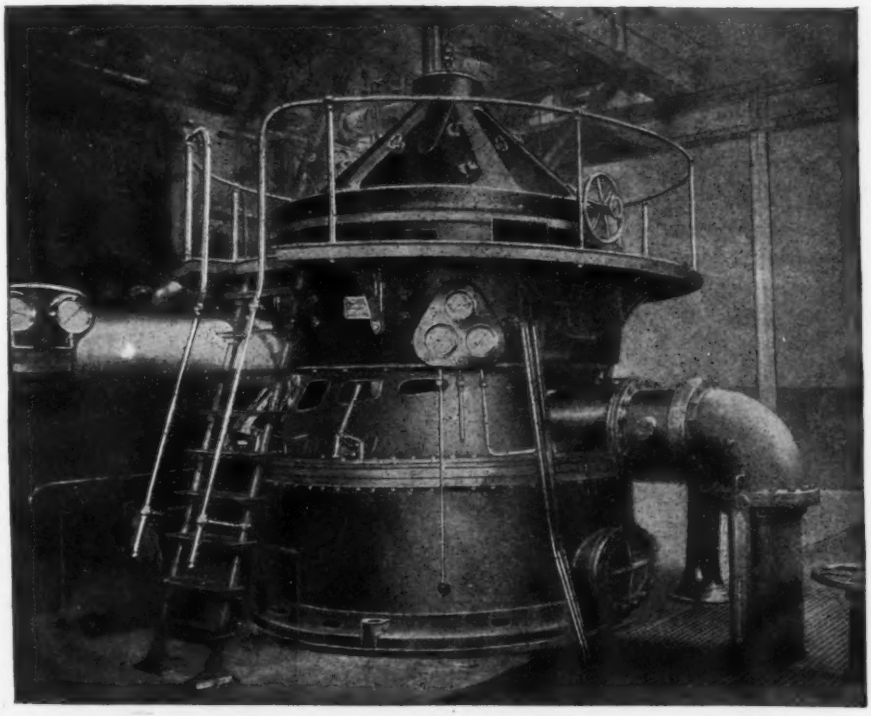
We also manufacture a complete line of

Paper Cop Tubes, Cones and Shells

Send your samples and we will quote prices on any lot desired

New York Office, 363-373 Rider Ave.

Curtis Low Pressure Turbines
operate with exhaust steam



31700 Kilowatts Installed – and on order.

The Curtis low pressure turbine offers a means of increasing the capacity and improving the economy of existing power stations which use reciprocating engines, whether the engines are now operating condensing or non-condensing. A complete line is available from 300 to 7,000 kilowatts.

It is also a means of producing electric energy from steam exhausted by engines employed in manufacturing—the energy being in the nature of a valuable by-product secured with a minimum expense. By this means old Engine driven plants can by a small expenditure be brought to a state of ideal economy.

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New York Office
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Principal Office, Schenectady, N. Y.

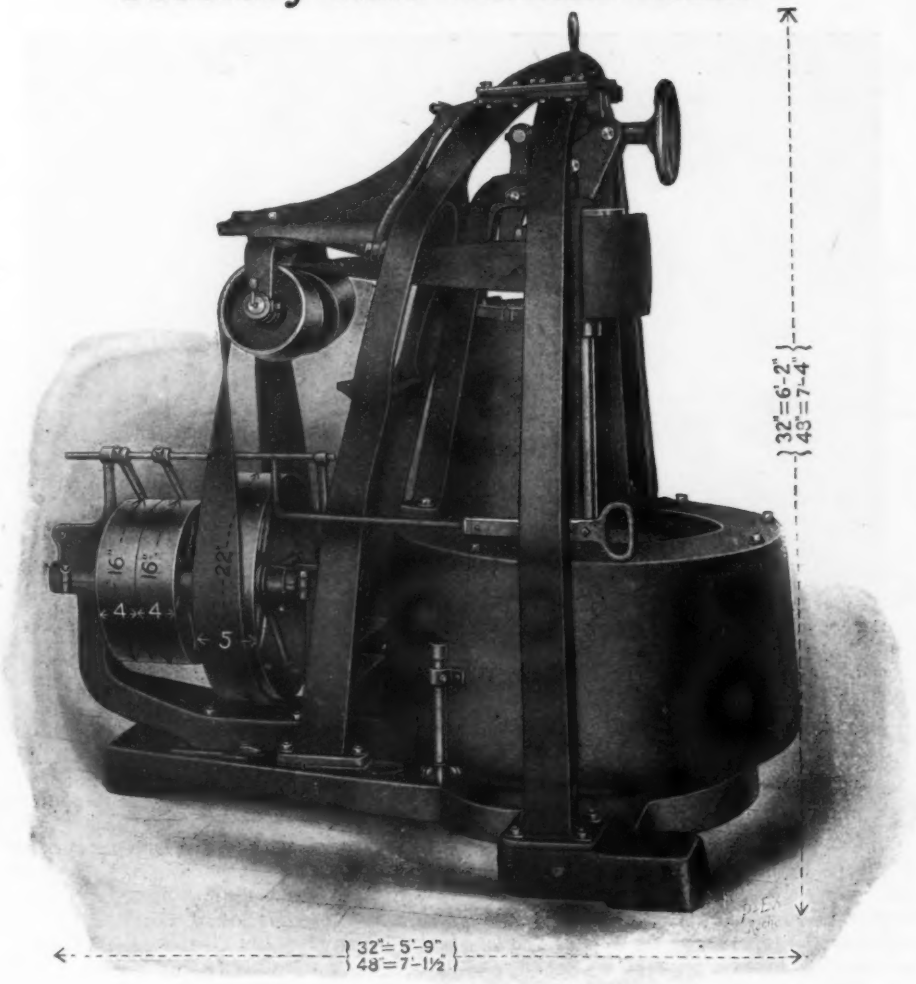
Sales Office in
all large cities

(2072)

Open Driven Extractors

FOR

Hosiery and Textile Mills



The American Laundry Machinery Mfg Co

Western Division
78-80 Franklin St.
Chicago

Eastern Division
132-138 W. 27th St.
New York

Southern Division
Station H
Cincinnati

Globe Cotton Softener

is a pure soluble product made from vegetable oil which replaces TALLOW and other substances as a softener and lubricant in the sizing, dyeing, finishing and bleaching of cotton yarns, fabrics, knit goods, etc.

Globe Cotton Softener modifies the stiffness and harshness due to the materials used in the various process.

When used by itself for softening, "oiling" or "greening" bleached and dyed goods, yarns or **knit** goods gives a full mellow feel and brightens the colors **without** greasiness.

Corn Products Refining Co., New York

New Process Noiseless Pinions

Make an ideal motor drive.

By their use you secure a noiseless positive drive with no decrease in efficiency. They will wear like iron.

NEW PROCESS PINIONS also reduce objectional vibrations and are therefore, the best for high speed drives.

New Process rawhide is cured by our secret process which makes it different from the ordinary kind.

For twenty years we have been making gears and we stand back of our product with a guarantee as to quality and workmanship.

We make all other kinds of gears as well as rawhide. May we tell you more about them?

Descriptive Catalogue for the asking.

The New Process Raw Hide Company

Syracuse, N. Y.

The Best That Money Can Buy

IN THE WAY OF

Perfected Modern Machinery
Highest Grade Materials
Most Able Management

Cannot possibly yield best results in any textile mill which has not a good supply of

UNIFORMLY PURE SOFT WATER

Eureka Apparatus of 10,700 Gallons Hourly Capacity.
Burson Knitting Co., Rockford, Ill.

Bad Water nullifies in discouraging ways the most persistent efforts toward quality and economy of production.

Good Water assists at every point and in every process, removing all uncertainties as to results.

The Dodge Automatic "Eureka" Water Softener and Purifying System

eliminates all bad-water difficulties and provides the essential conditions necessary for highest quality, at lowest cost.

It co-operates with the best of regular mill equipment, the best of materials and the best of operative methods, to the attainment of best productive results.

Then, too, there is the great advantage of having non-incrusting feed water for the boiler plant.

Installations made to suit the conditions of all cases. Each proposition considered individually, and apparatus proportioned accordingly. Results guaranteed. No guess work.

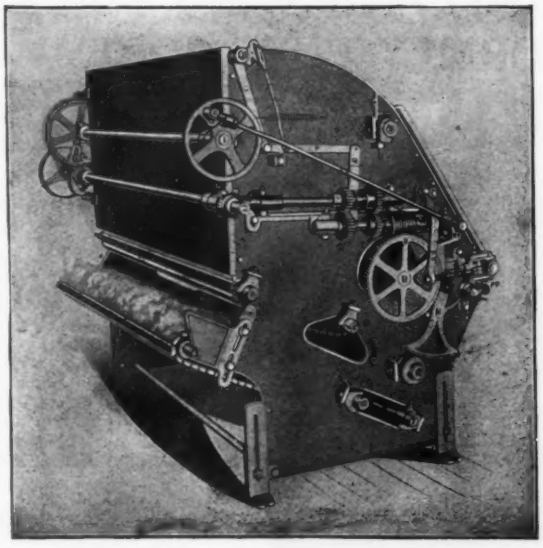
YOU SHOULD READ OUR RED BOOK NO. 414.

Dodge Manufacturing Company

MISHAWAKA, INDIANA

Station I-46

THE FISHER PATENT CARD FEED



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Woonsocket Machine and Press Company

WOONSOCKET, R. I.

Business Established 1865

My last advertisement covered facts that cannot be refuted.

Today my Business is in a flourishing condition.

Advance orders are coming in for future delivery—not in one but in all lines of WINDING, SPOOLING, WARPING and BEAMING MACHINERY—and many other classes of machinery for the multifarious classes of textiles.

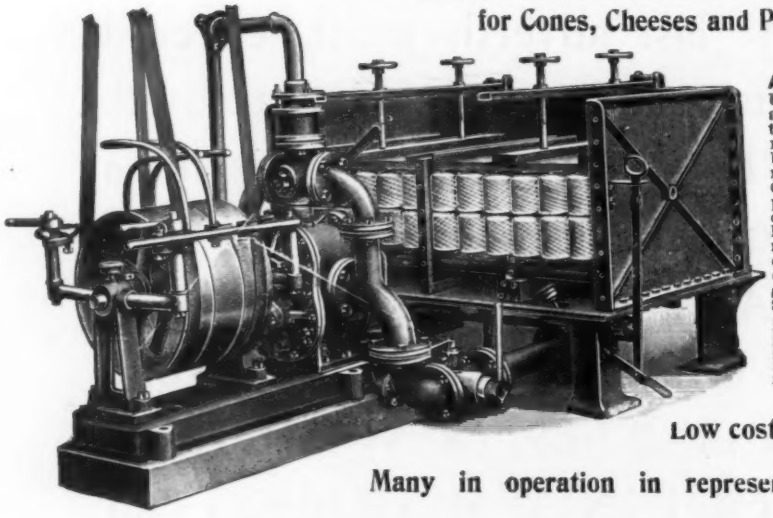
JACOB K. ALTEMUS

Textile Machinery

2824 No. 4th Street, - Philadelphia, Pa.

Dyeing and Bleaching Machine

The Latest and Most Successful for Cones, Cheeses and Parallel Tubes



ADVANTAGES: Uniform bleaching and dyeing throughout. Colors requiring several baths dyed without removing bobbins. Good for fast sulphur black and all colors, little dye liquor needed; none lost. Bobbin deformation avoided, consequently good running off. Simple and accurate sampling, large production, little power. Very little attention needed.

Low cost–high quality

Many in operation in representative mills

We also make a specialty of apparatus for dyeing and bleaching roving, slubber bobbins, warp-beams and cops

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LATEST SPECIALTIES FOR COTTON, WOOLEN AND WORSTED FINISHING.

DRY AND WET DECATING MACHINES FOR PERMANENT HIGH LUSTRE.

WASHING, DRYING, CONDITIONING, MERCERIZING AND CARBONIZING MACHINES.

SUCKING-OUT MACHINE (replacing hydro-extractor) FOR PIECE GOODS.

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Importers of Textile Machinery Specialties

Rubber Covered Rollers

NEW ROLLERS COMPLETE OLD ROLLERS RECOVERED

Our Rollers give satisfaction BECAUSE

The coverings are carefully made of high grade rubber by men of long experience.

The consistency of rubber covering is properly adapted for the required work.

The rubber covering will not become loose from the shaft under fair usage.

They produce results not otherwise obtainable.

They are economical from every standpoint and unequalled in both the quality and quantity of service which they render.

We furnish Rubber Coverings especially adapted for Dyeing, Mercerizing, Padding, Printing, Sizing, Squeezing, Starching, Carbonizing, etc.

BOSTON BELTING COMPANY

Rubber Belting, Hose, Packings, Valves, Gaskets

BOSTON NEW YORK BUFFALO PHILADELPHIA ATLANTA

No one wool oil is adapted to all kinds of wool any more than one machinery oil is adapted for use on all kinds of machinery.

"Breton" Oils

Have been in use for over twenty-five years on all grades and kinds of woolen goods.

Mills that adopted them when first introduced are using them now—proof positive of their great merit.

To those who have never tried them we will be pleased to send a quantity sufficient for trial on receipt of information regarding the kind of goods made.

Equal in merit to lard oil and costs 10 to 20 per cent less.

Tell us your requirements.

The "Breton" line includes an oil for every textile need.

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216 No. Front St.

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160 Third St.

WORKS:
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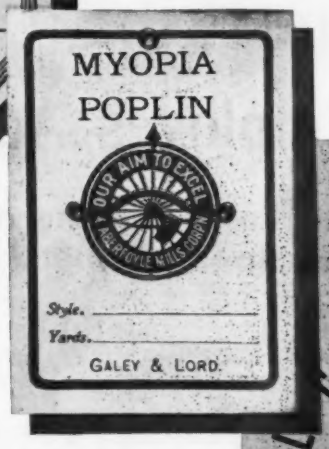
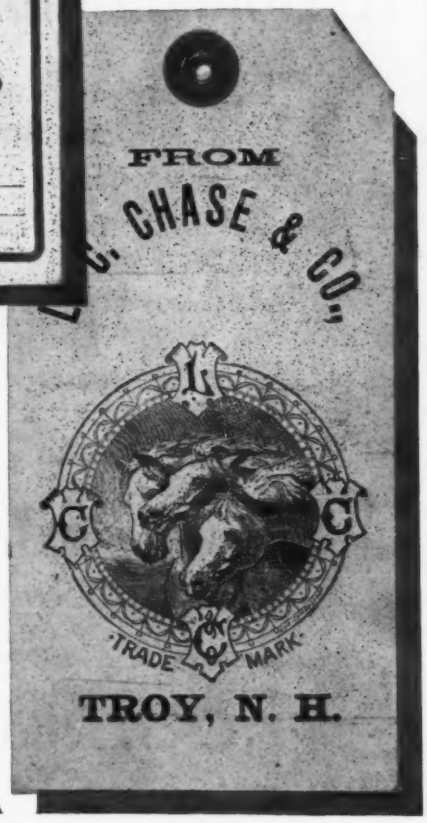
Dennison's Woolen Tickets

Distinctive in design, the best of stock, printing and embossing, cutting, eyeletting and stringing.

We'll gladly embody your idea on a ticket, submit you sketch and quote you price.

For samples and information address our nearest store.





Dennison's Shipping Tags

In 1864 we made our first tag—before that no tags had been made in America. 45 years of experience have taught us much in knowledge of demand and best methods of manufacture. Every Dennison Tag bears the Dennison patch, attached by a special water-proof gum. Every Dennison Tag is guaranteed to give satisfaction. There's a specific quality for every specific need. You will not be disappointed if you use DENNISON Tags.

SOLD BY ALL STATIONERS.

Dennison Manufacturing Company

THE TAG MAKERS

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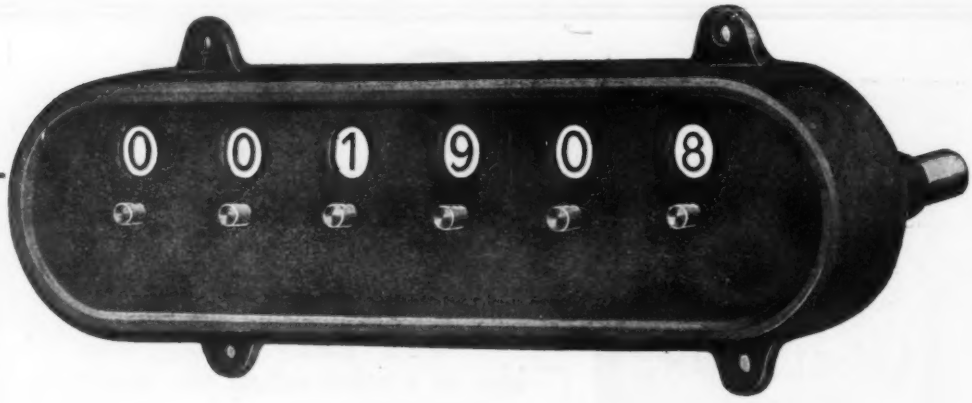
26 Franklin St.	15 John St.	1007 Chestnut St.
CHICAGO	Uptown Store, 27th St.,	ST. LOUIS
25 Randolph St.	Between 5th Ave. and Broadway.	413 N. Fourth St.



It Counts the Output
It Holds Employes Accountable

It prevents over-running orders and waste of raw material.

The Lineal Counter infallibly records a machine's output in Hanks, Pieces, Yards, Picks—or any unitform. It can be used on Balling Machines, Twisters, Dryers, Dressers, Folders, etc. Beside saving time and labor it enables you to make daily comparisons of productive capacity of an employe or machine, and therefore to make accurate cost estimates.

Write for details. Ask us to solve your counting problem.

C. J. Root Company,

Bristol, Connecticut

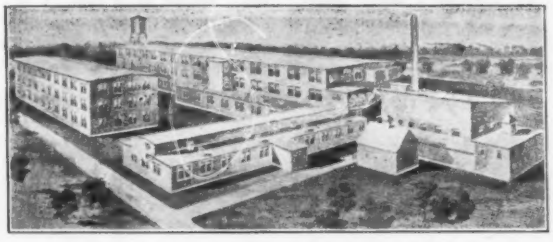
Peter B. McManus,
Pres. and Treas.

Edward J. McCaughey,
Secy. and Mgr.

John McManus,
Vice-Pres.

Home Bleach and Dye Works

INCORPORATED



Dyers, Bleachers and Mercerizers of

Cotton Yarns

in skein and long and short

Chain Warps

Fast Colors a Specialty

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade

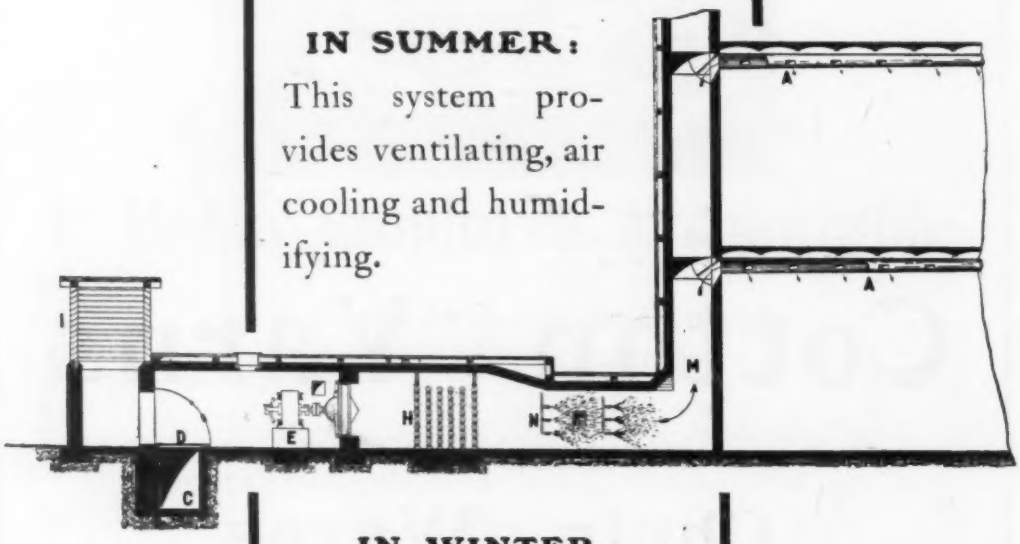
Office and Works, Pawtucket, R.I.

Established 1881.

KOERTING HUMIDIFYING SYSTEM

IN SUMMER:

This system provides ventilating, air cooling and humidifying.



IN WINTER:

This system provides ventilating, heating and humidifying.

Perfect Humidifying; Low Operating expense.

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Chicago, Security Building
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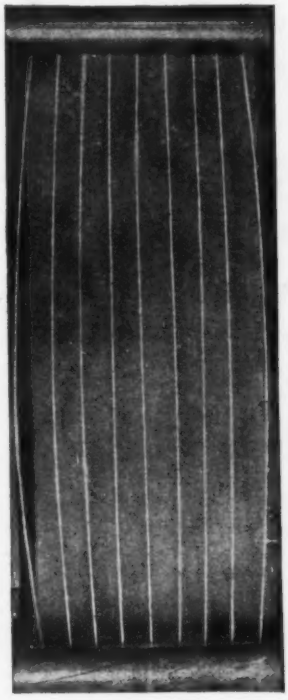
THE CHAPMAN PROCESS

W. H. CHAPMAN, Patentee

REMOVES ALL TROUBLE CAUSED BY FRICTIONAL ELECTRICITY

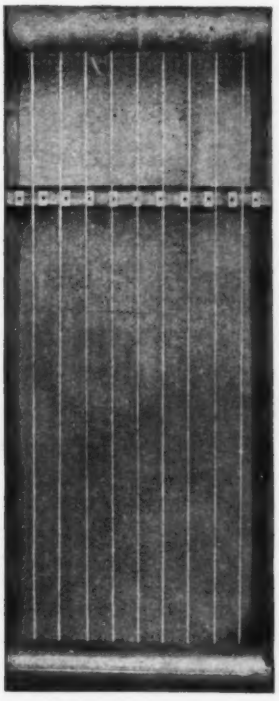
in Woolen and Cotton Mills

on Woolen and Cotton Cards, Drawing Frames, Shears, Unwinders, Finishers, Warpers, Beamers, Etc.



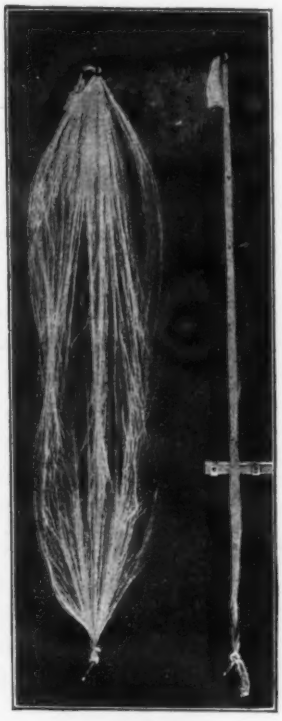
Before Treatment

Woolen roving as it appears when charged with frictional electricity and before being treated by the Chapman Process. Notice the bowing strands caused by electric repulsion.



After Treatment

Woolen roving after being treated by the Chapman Process. Notice that all trace of electricity has disappeared and strands are parallel to each other.



Before and After Treatment

Silk threads showing the effects of frictional electricity and its disappearance after being treated by the Chapman Process.

Write for full information and prices to

CHAPMAN ELECTRIC NEUTRALIZER COMPANY

PORTLAND, MAINE, U. S. A.

Sole Owners of United States and Foreign Patents

A Dissertation on Molecules

Which would you rather have, a lengthy dissertation on molecules with an exact statement of how many and how active are those contained in one-sixteenth of a cubic inch of hydrogen gas, or

The Turbo-Humidifier?

(The Humidifier with the guarantee)

The Turbo is not an evaporative humidifier. A satisfactory humidity obtained by evaporative devices, if such be possible, is secured at the expense of light, constant attendance for cleaning cloths and drain pipes, which foul; fans to lubricate, belts or motors to watch. Unlike the Turbo, evaporative devices are impossible in low posted rooms, expensive to install and maintain.

Attendance cost for the Turbo is practically nil; once adjusted it will operate months at a time without attention. More or less humidity, operating as many as necessary. Automatic regulation if desired. Complete vaporization; no moving parts—and a guarantee.

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FITCHBURG, MASS.

Southern Office: No. 1 Trust Building, Charlotte, N. C.
B. S. COTTRELL, Manager

"Straws show which way the wind blows"

10,000
Looms now in use are equipped with

8,000
New Looms are now being equipped with

CORK INSERTS

(PATENTED)

The Crompton & Knowles Loom Works have recently adopted Cork Inserts as the standard equipment for all friction driven looms.

More than 250 Textile Mills are using Cork Inserts in thousands of Pulleys and Clutches in many cases equipping them in their own machine shops in accordance with instructions from and under license granted by the National Brake & Clutch Co.

As indicative of the extent to which this is being done there are now being equipped about 80 pulleys ranging in size from 42 in. x 4 1-2 in. to 72 in. x 36 in. in one department alone of a large textile concern, already using hundreds of Cork Insert Pulleys.

Another mill is having 200 new Spinning Frames equipped with Cork Insert Pulleys and still another is having 600 Cone Loom Frictions equipped with Cork Inserts.

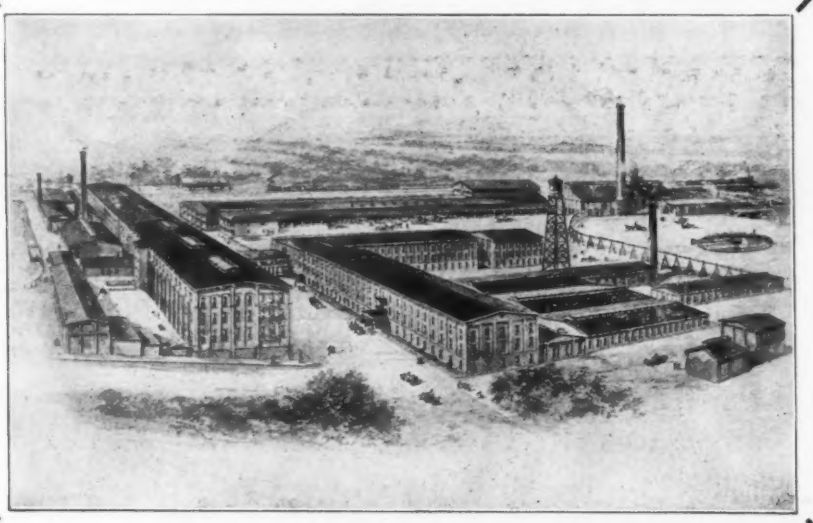
Many mills are equipping the Pulleys and Clutches of Mules, Slashers, Calenders and other types of textile machines with Cork Inserts.

50,000 New Motor Cars will be equipped with Cork Insert Clutches in 1910 by 60 manufacturers.

Send for booklets A & B showing 90 applications and how Cork Inserts give increased efficiency in textile mills.

National Brake & Clutch Co., 16 State Street, Boston

STANDARD BLEACHERIES, CARLTON HILL, N. J.



Capacity 500,000 Yards Daily

THIS MEANS THAT ALL ORDERS
LARGE OR SMALL CAN BE

Quickly As Well As Properly Filled

PIECE MERCERIZING
BLEACHING, DYEING AND
FINISHING

FINE COTTON GOODS
AND EMBROIDERIES

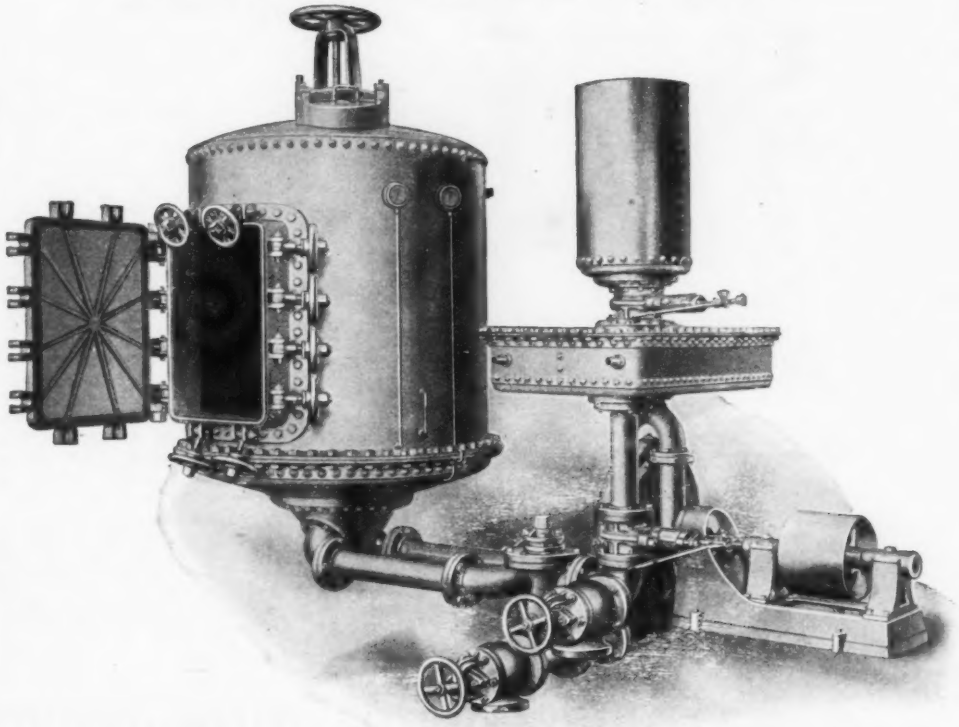
STANDARD BLEACHERY CO.

CARLTON HILL, NEW JERSEY

A Complete Dye-House In One Machine

Colored Goods Manufactured by use of same Winding Processes as Grey Goods

ELIMINATES SKEIN WINDING and WARPING



FRANKLIN DYEING MACHINE

(Patents pending in the United States, Canada and principal Foreign Countries)

For COTTON, WOOL and WORSTED YARNS

Dyes Cotton in the Lap—Wool in Card-Ball—Worsted in the Top

MACHINES IN PRACTICAL OPERATION IN MILLS DEMONSTRATE A

Saving of 25 to 30 % in Dye-Stuffs and 75% in Labor Cost

NO HYDRO-EXTRACTOR REQUIRED

FRANKLIN PROCESS COMPANY

P.O. Box 465 Providence, R. I.

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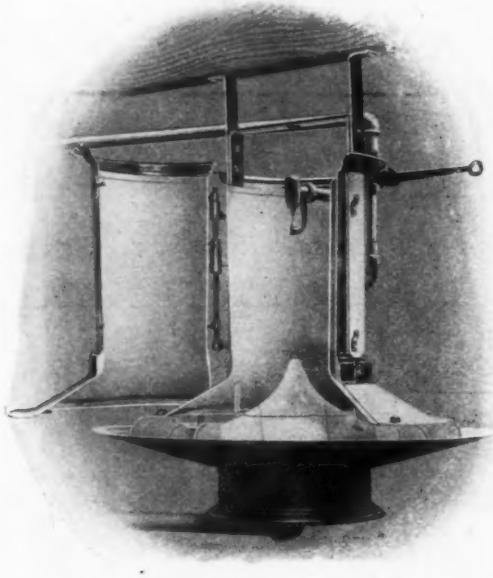
Supremacy Maintained

THE HUMIDIFIER THAT EMBODIES THE FIRST REAL IMPROVEMENT IN HUMIDIFICATION



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COMINS SECTIONAL HUMIDIFIER

assures the continued supremacy of the

AMERICAN MOISTENING COMPANY'S AIR MOISTENING SYSTEM

THIS WAS THE FIRST SYSTEM TO PROVE SATISFACTORY FOR ALL USES AND IT IS

POSITIVELY FLAWLESS

Write for booklet T

AMERICAN MOISTENING CO.

WILLIAM FIRTH, President. **FRANK B. COMINS, V. P. and Treas.**

Efficiency Increased

INDISPUTABLE EVIDENCE OF EFFICIENCY IS SHOWN BY ITS PROMPT ADOPTION BY THE FOLLOWING:

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three months of its introduction

IT IS ABSOLUTELY SIMPLE AND PRACTICALLY EFFICIENT

THE COMINS SECTIONAL HUMIDIFIER IS THE EASIEST TO CONTROL— ALL PARTS ARE INSTANTLY ACCESSIBLE

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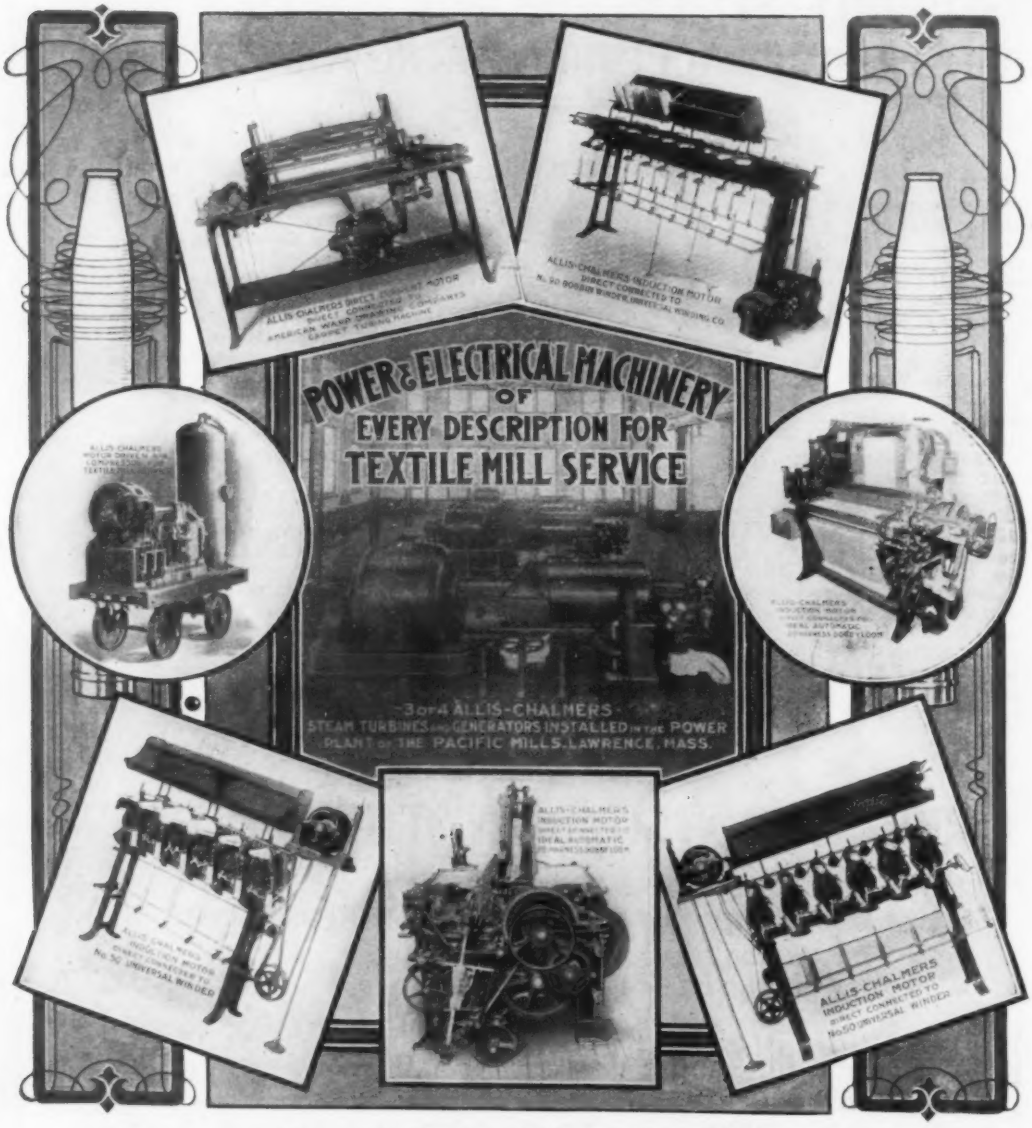
79 MILK ST., BOSTON, MASS.

J. S. COTHRAN, Southern Representative, Charlotte, N. C.

ALLIS-CHALMERS CO



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New York Office, 71 Broadway
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The Successful Transmission of Power

from the Engine Room to all parts of your mill depends on the condition of your belts; and the condition of your belts depends upon the Quality of the Belt Dressing you use.

GET A BOX AND TRY IT

This is Your Absolute Protection in Getting

GENUINE STEPHENSON BAR BELT DRESSING

The kind that won its favor through its quality— the quality that keeps the belts in prime condition. Beware of the many attempted imitations now on the market. They imitate in name and appearance only. The quality—**THE ONLY QUALITY**—belongs exclusively to the original **STEPHENSON BAR BELT DRESSING,** which bears the above trade mark, **the Man with the Cog-Wheel Face,** on each pound stick.

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Albany, N. Y.

Send 10c for Sample Can of **STEMKO BELT KLEANER** which removes oil and grease and rejuvenates Belting.

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"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

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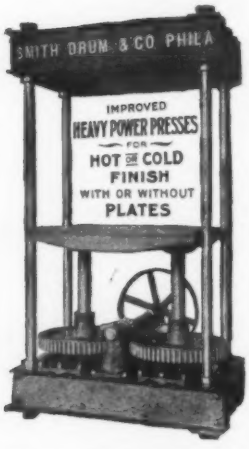
IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES



SAVE LABOR and **DYE STUFF** and do **BETTER WORK** in your dye house by using

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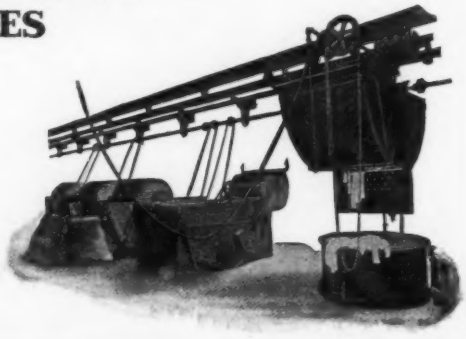
Full Particulars on Application



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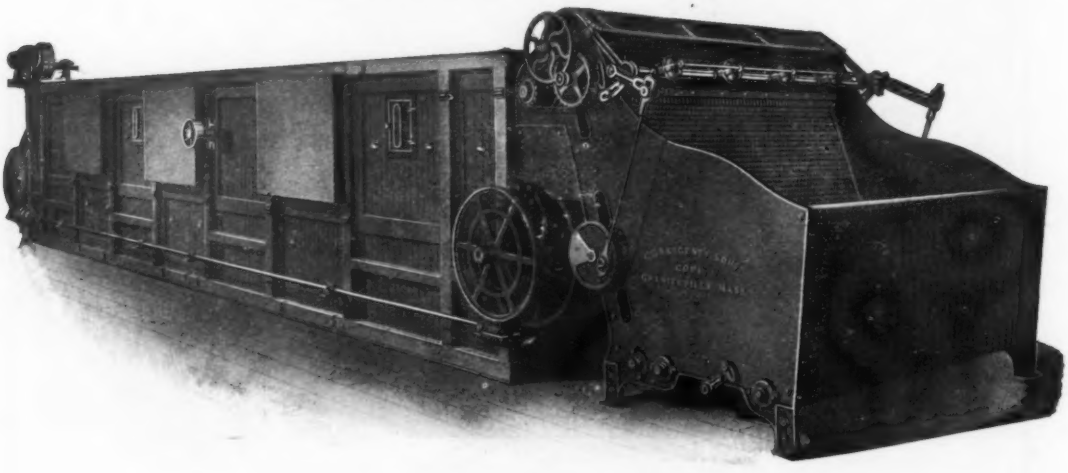

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Stock Dryers, Wool Washers, Wool Dusters, Carbonizing Plants, Burr Pickers, Etc.

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WORSTED DRESS GOODS, WORSTED TOPS, WORSTED YARNS, MERCERIZED YARNS, COMBED COTTON YARNS

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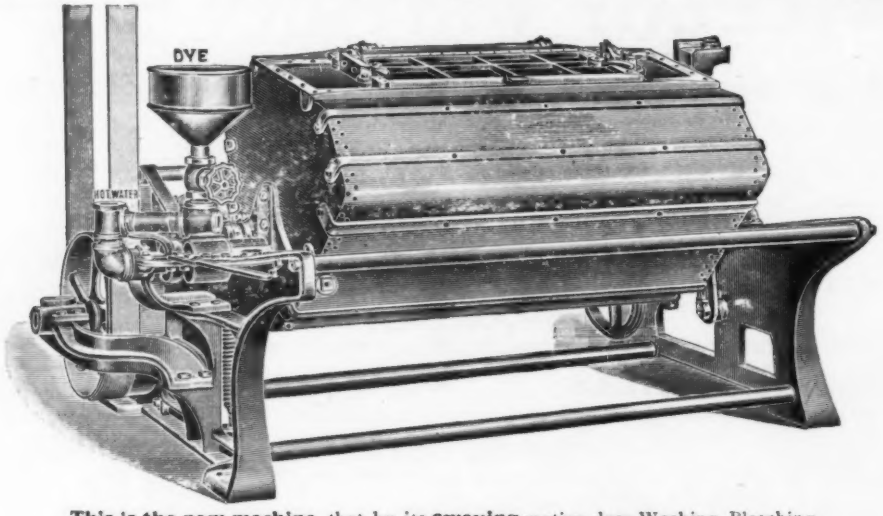
Reliable Oscillating Dyeing Machine



This is the new machine that by its **swaying** motion does Washing, Bleaching, Dyeing and Dry Cleaning with **less injury** to the goods, but with **greater economy, uniformity,** and **satisfaction** than is otherwise possible. Send for **proof** of this.

The Reliable Foundry & Machine Company,
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170 Summer Street, - - Boston, Mass.

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JOHN HETHERINGTON & SONS, Ltd.
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Improved Noble Combs

Also representatives for the best make of Gill Boxes, Worsted Drawing, Spinning, Twisting, Looms, and all kinds of mill supplies.

SPECIALTY—Worsted Machinery repaired and rebuilt with the latest improvements or altered as desired.

Machine Shop, Farley St., Lawrence, Mass.

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New River Consolidated Coal & Coke Co.'s

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Nonpareil Bituminous . . All Rail and Tide Water
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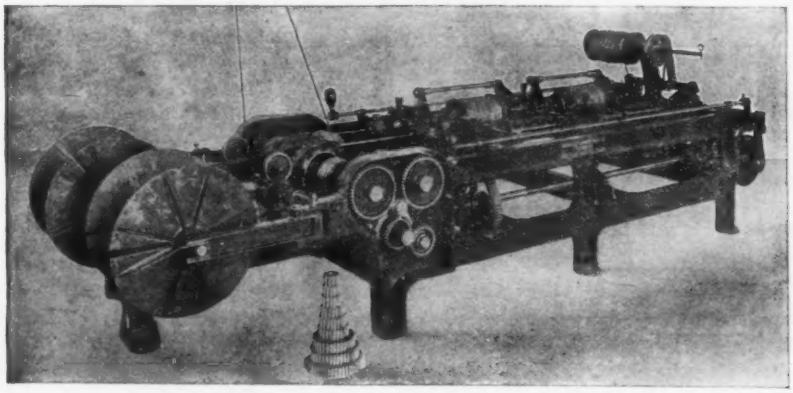
The Haskell-Dawes Machine Co.

176 Federal Street., Boston, Mass. Works: Frankford Junction, Philadelphia



Spinning, Forming, Twisting and Laying Machinery.

We build the Very best type of

Modern, High Speed, Geared Machines

For Making Cotton, Flax, Jute and Manila Rope and Twine.

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POWER TRANSMITTING MACHINERY

RING OILING HANGER
"PHILADELPHIA PATTERN"

Shafting Pulleys
Couplings Fly Wheels
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Power Plants Designed and Equipped

Prices Right **Shipments Prompt**
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ENGINEERS **FOUNDERS** **MACHINISTS**

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90 West Street

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BUCKEYE TUNGSTEN LAMPS As Installed By THE BUCKEYE ELECTRIC CO. Will Increase The EFFICIENCY OF SILK MILLS Where Artificial Light Is Required WITH TRUE COLOR VALUE.

BUCKEYE TUNGSTEN LAMPS The BEST AND CHEAPEST PROTECTION AGAINST IMPERFECT WORK

NO BREAKAGE FROM VIBRATION AND HANDLING. LIGHT WHERE IT IS WANTED.

Write The Buckeye Electric Co. For Full Particulars.

THE BUCKEYE ELECTRIC COMPANY

CLEVELAND, OHIO

Light

What the men in the mill have to say about it.

"In the room where the final inspection of the cloth is made, the best artificial light is required, and we use Nernst. On any work where an especially good light is needed, the *Nernst is better than any other light on the market.*"

"For general factory lighting, the color and diffusion of the Nernst light is admirable and is the best that can be obtained. It is satisfactory in every way and *is far superior to the Tungsten.* The maintenance of the lights is very low and we save a great deal of money by using the Nernst lamps."

"Lamps are O. K. Light is fine in every respect. The men in the shops say it is a great light to work under for all ordinary purposes. In some of the cast-iron rooms, the dust is considerable and may affect the lamps some, but they stand up as well as any electric lamp could. *Far superior to Tungsten in every way.*"

"After trying several forms of lighting, we adopted the Nernst as being the most satisfactory. The light is soft and well diffused, the absence of shadows being most marked, and if there were no other points in its favor, we would choose the Nernst as being *superior to all other lighting systems.*

"We are more than pleased with our installation of the Westinghouse Nernst Lamps.

The light is so much superior to Arcs and Incandescents that our weavers now take off better cloth, and more of it, than they did under our old lighting system. This is principally on account of its being *easier to distinguish colors.*

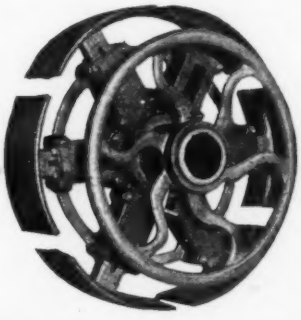
In addition to our now receiving a much better light, our lighting load has been decreased from 120 to 70 Amperes by throwing out twenty-two Arc Lamps and about 50 Incandescents, and installing one-hundred and one of your 110 Watt Nernst Lamps."

Send for the names of the men who made these statements. There is only one lamp that is better for mill lighting than the Nernst and that is the Westinghouse Nernst, representing our latest improvements.

Nernst Lamp Company, Pittsburg, Pa.

NEW YORK—241 West 42nd Street
PHILADELPHIA—536 Drexel Building
BOSTON—607 Boylston Street
ATLANTA—1328 Chandler Building

Offices in other principal cities.



EXPANSION PULLEY

A Moderate Priced Expansion Pulley Built on an Interchangeable System

Adapted to use in all places where relative speeds of connecting machines need to be corrected.
Diameter of pulley is instantly and easily adjusted by means of the handwheel.
Because all parts are interchangeable and are manufactured in large quantities the cost of a very superior expansion pulley is greatly reduced.
Note the sizes and prices:

18in. to 22in. diameter	$32.50	28in. to 32in. diameter	$42.50
23in. to 27in. "	37.50	32in. to 36in. "	47.50

All interchangeable parts carried in quantities and all orders filled the same day received.
By means of interchangeable bushings pulleys can be fitted to any shaft.

THE TAYLOR & FENN CO.,

Machinists and Founders. **HARTFORD, CONN., U. S. A.**

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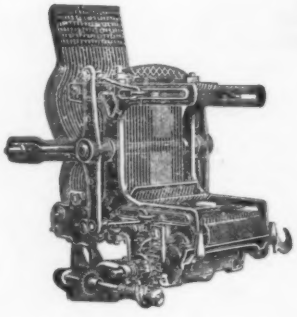

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are best adapted to every requirement — always the leaders in efficiency and economy.

We apply them to any and all makes of looms.

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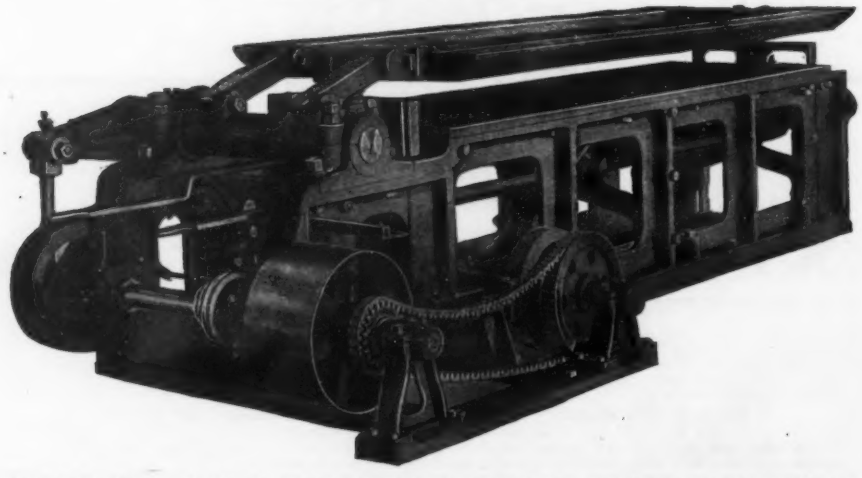


SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.

Machine Molded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.

Heavy Castings, in Gray Iron or Semi Steel.

According to the Specifications of Sir Benjamin A. Dobson, C. E., M. I. M. E.

The Bell Humidifier

—and it alone—

Meets all the Requirements of the

Cheapest

Most Efficient

Most Regular

and

Simplest

Method of maintaining a constant degree of humidity in an enclosed body of air.

(See Next Three Pages)

Read what Sir Benjamin A. Dobson, C. E., M. I. M. E., in his book "Humidity in Cotton Spinning," revised by W. W. Midgley, F. R. Met. S. (1901), says on this all-important subject:

*"In all systems, the water, contained in the air in a state of suspension, is either a chemical or mechanical mixture. What I would say is that natural evaporation secures general diffusion and intimate and atomic assimilation; and, further, that air and water so assimilated have no tendency to separate by condensation until the conditions of temperature or pressure have necessitated it. On the other hand, in all mechanical appliances for distributing fine particles of water in a proportionate quantity of atmosphere, there is a limit to the power of atomization or pulverization; and, no matter what pressure be used, the subdivision into particles is infinitely inferior in number to the result of natural and free evaporization. Therefore, any system of its kind, whatever its name may be, can only be relatively advantageous as compared with natural systems. If we take another illustration—such as vapor rising from the ground during an excessively heavy rainstorm, or the spray formed by a deep water-fall—it will be found that the humid air is confined to a short radius round the center of action; but when the rising sun by its radiating heat causes a mist of vapour, this does not precipitate in the form of rain or dew, but is gradually absorbed into the air by the increasing elastic force of aqueous vapour. I hope this will make plainer my remarks with regard to the difference between chemical and mechanical moisture, and afford further proof of the advantage of the natural method.

"Now, it is found by actual observations that the conditions of moisture in a room naturally humidified is very much more equal than in any mechanical system. This is explained by the facility with which natural vapour can be assimilated by the neighboring air, as opposed to the mechanically powdered water; and may be further illustrated by an example in chemistry, where, in a perfect chemical solution, it is possible to continue dilution until the absorbed substance is one part to a million. In a simple mechanical mixture the limit of dilution is quickly reached. Thus all systems of humidifying which have for principle the pulverization of water, have the initial defect I have alluded to: and they can at best be but a rough-and-ready way of attempting to solve what is, after all, a simple problem.

* * *

†"As a still further proof of the inefficiency of this system of humidifying, I point to the fact that it is not practicable to place this

(*pp. 40-41. †p. 43.)

apparatus near moving bodies, such as driving straps or shafts; in any case where there is an induced current of air precipitation takes place. To such an extent is this so, that the apparatus has had to be moved from the center of the room to the sides to avoid the action of the shaft and straps upon the air.

‡" In a visit to the United States, where, as I have said previously, this question is one of great importance, and where many inventions have been tried, I had an opportunity of inspecting various systems. I state unhesitatingly that there was more or less precipitation in every case of mechanical humidification. This will be easily comprehended when I remark that, in a state of the slightest motion, air will not carry a greater weight than 80 per cent. of such vapour, and, the quicker the motion of the air, the greater the precipitation.

" I scarcely know whether it would be time well spent to discuss the bearings of the question of live steam admitted in the working rooms. There may be manufactories where such a course is necessary, but I do not know of any, and most certainly spinning and weaving are not in the category. As has been pointed out previously in this paper, live steam will increase rather than diminish the electrical difficulty, particularly with wool stock much more than with cotton. It is exceedingly unpleasant to the persons working in the room, and, I think is generally admitted, very injurious to their health. It is, therefore, undesirable from every point of view, and, as proper conditions of the air can be so easily arranged in other ways, there would seem to be little excuse for a continuance of this practice. I am glad to say that, personally, I do not know of any mill in this country where such a practice obtains, although I have seen it often enough abroad.

" Taking into consideration the cost of the plant, the power, the cost of supervision, the cost of replacement and repairs necessitated where spray humidifiers are employed, and, above all, the inefficiency and inequality of the result as compared with the system of evaporation, I feel justified in declaring that, in my opinion, the cheapest, most efficient, most regular and simplest method of maintaining a constant degree of humidity in an enclosed body of air is the application of some simple system of natural evaporation."

(‡ *pp.* 43 *and* 46.)

The principle of the Bell Humidifier, owned and sold by the Griscom-Spencer Co., 90 West St., New York, conforms in every detail to the last mentioned method, while avoiding the defects of other systems criticized by the author. The Bell System of Humidification is absolutely the only system that does this.

(See next page)

In the matter of

Increased Output

and

Reduced Costs

equalling

Larger Dividends

Our engineering staff, at our expense, will gladly make an examination of your mill and its problems.

We believe that we can then demonstrate to your complete satisfaction why

The Bell System of Humidification

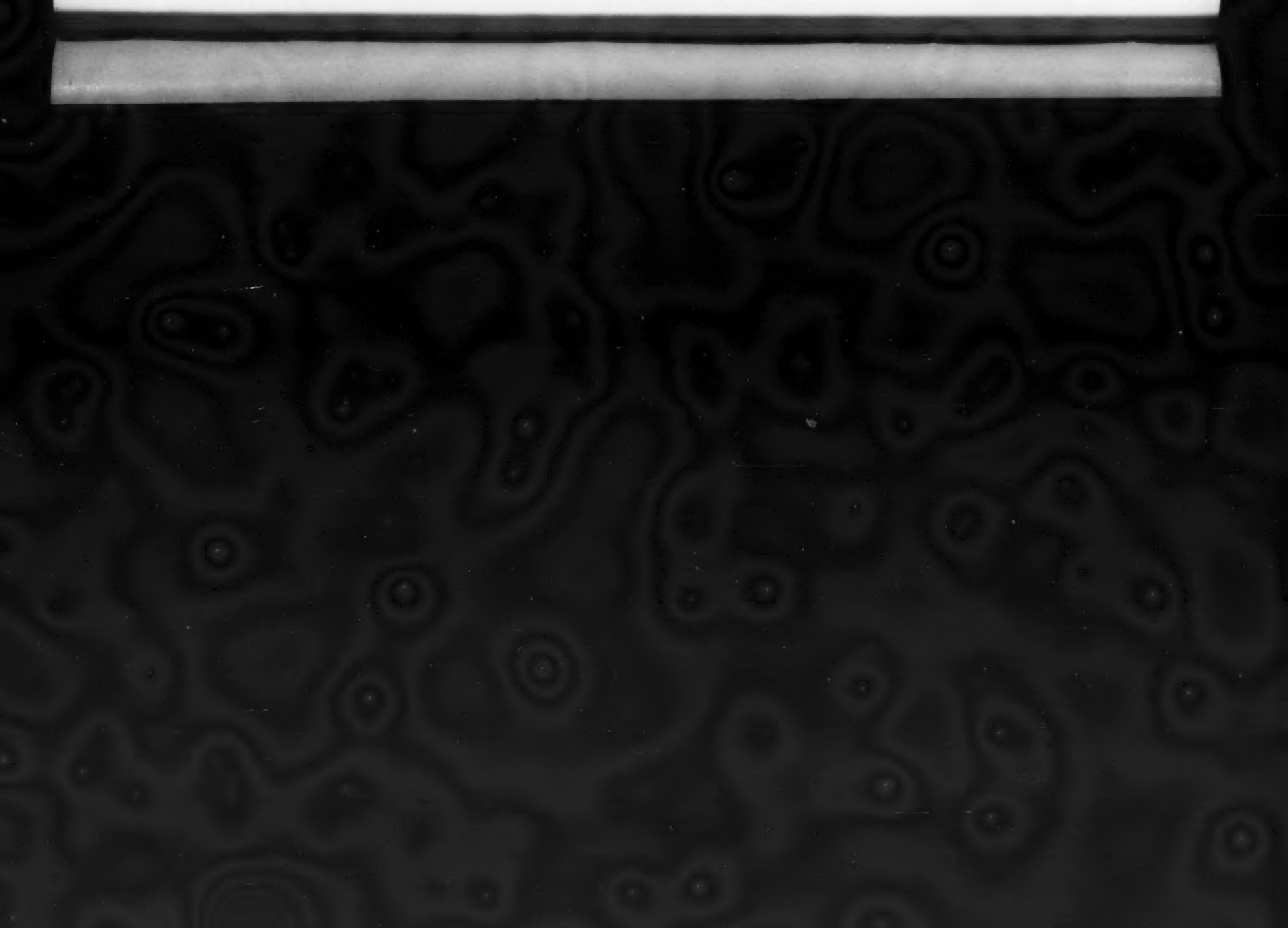
will pay you to install. The reasons are that you can make more money through increased output and reduced costs (giving larger dividends). This sounds like a mere statement; but, if you will give us a chance, we will satisfy you that it rests upon

Incontrovertible Facts.

If you are ready to make more money (even if you have humidifiers installed) write us to take up your problem.

The Griscom-Spencer Co.
90 West Street
New York, N.Y.
Ventilating and Humidifying Engineers

(See three preceding pages)



Gentlemen—The Philips Pulley!

Study it—every detail, from hub to crown reveals some point of superiority.

THE RIM, constructed of two thickness of steel has a perfect, smooth, unbroken surface. Having no rivets or grooves, the face gives the most possible belt contact, insuring perfect belt traction, therefore transmitting the maximum horse power of the belt.

The ***RIM LUGS*** extend over the entire width of the pulley, making this usual weak point one of the strongest in the Philips Pulley.

The ***ARMS*** are of bridge construction, which equally distributes the strain over the entire circumference of the Philips Pulley and minumies the strain on any one set of arms. The outer edge of the rim is greatly reinforced by our placing the arms on each side of the hub.

The ***HUB,*** cast iron, is exceptionally strong, much superior to the pressed steel hub which is weakened by the necessary distortion of the steel fibres in manufacturing.

If these appeal to you, write us now, today; there are still more advantages.

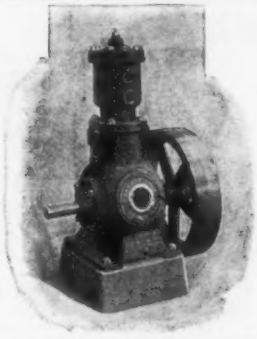
Philips Pressed Steel Pulley Works,
Philadelphia, Pa.

Use Compressed Air for Cleaning

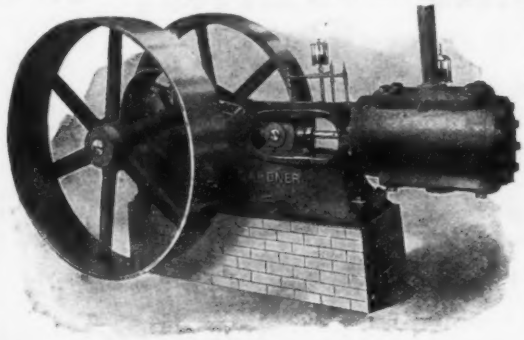
Your mills and machinery. The neatest and most effective plan. Best results are insured with

Gardner Air Compressors.

Made in capacities from 4 ft. to 800 ft. Single and duplex, *belt or electrically driven and steam actuated types.* Our new G. R. Vertical High Speed machines especially desirable and without an equal. Enclosed self oiling and very efficient. Light in weight, requires little floor space and easy to install. Extremly simple—put oil in crank case and machine will take care of itself. No rebabbiting of worn out bearings necessary.



G. R. Vertical High Speed Self Oiling Compressor.



Horizontal Belt Driven Center Crank Type.

Write for descriptive bulletins and prices.

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Metallic Drawing Roll

Over the leather system before placing orders for new machinery, or if contemplating an increase in production, have them applied to their old machinery

33 Per Cent. More Production GUARANTEED.

SAVES

Roll Covering, Floor Space, Waste and Varnishing, Power, Wear.

ONE-THIRD LESS WEIGHT REQUIRED.

Write for Points Claimed, also Prices and Particulars to

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Cloth Washers, Dye Tubs, Vats, Fulling Mills,
Piece Dyeing Machines, Special Machinery,
Brass Founders, Tanks, To Order.

Hopkins Machine Works, Inc.

BRIDGETON, R. I.

Providence Office, 49 Westminster St.

Spindles and Flyers, for Cotton, Wool, Silk, Flax, etc.

Send for our latest Catalogue and Price List

Dye Tub Valves, Cloth Guides, etc. Bronze or Porcelain Rings.

Make Your Own Bleach Out of Salt Water

We can supply the Knitting Mill trade with an Electrolyzer for the production of bleaching liquor out of ordinary salt water by means of an electrical current, at a very small cost compared with what it will do. Does away with chloride of lime entirely; reduces the amount of sour; no danger of tendering goods. Operates under direct current. Hundreds in use. Prices and full particulars on application.

The National Laundry Machinery Co.
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MAKERS OF MACHINERY FOR

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Flax, Hemp, Tow and Jute

Special Machinery for the Manufacture of Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

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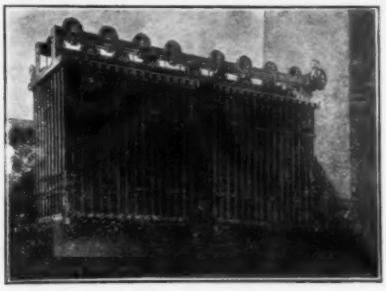
EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES



An Economizer in a Textile Mill

Can save 10 to 15% of the total coal consumption.

Provide large volumes of hot water for kiers, dye-tubs, etc., instantly on demand without reducing steam pressure in the boilers.

Double the capacity of the boilers without requiring more floor space.

We would be pleased to substantiate each of these statements by reference to plants installed or by figures based on conditions in your own plant, if you will give us the particulars.

The GREEN FUEL ECONOMIZER is a money making investment for the textile mill owner. It pays for itself inside of two years. We are willing to guarantee the performance and we will undertake to keep the economizer in first class running order for 1% per year of the initial cost. We can refer you to large numbers of economizers that have been in continuous satisfactory service for from 20 to 30 years.

The Green Fuel Economizer is already installed in steam plants aggregating over 50,000,000 H. P. We have had 60 years' experience in the design of steam plants and are often able to advance valuable suggestions to steam plant owners.

Write for Catalog "106 T W."

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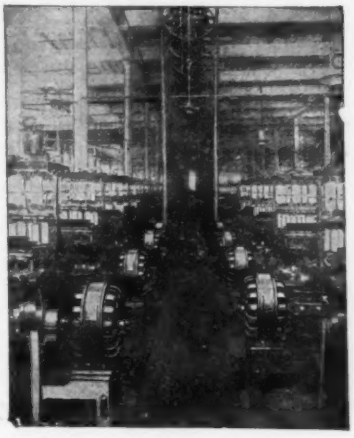
Engineers; Builders of Green's Fuel Economizers, Fans, Blowers and Exhausters, Steam Air Heater Coils, Waste Heat Air Heaters, Mechanical Draft, Heating and Ventilating and Drying Apparatus, Draft Dampers and Engines

Note the Contrast

as shown in the illustration, of the working conditions surrounding the belt-driven spinning frames in the background, and those in the foreground individually driven by Westinghouse Motors.

There is no slip nor loss of power with Westinghouse Individual-Motor Drive; every frame becomes an independent unit, driven at exactly its maximum producing capacity, and consuming only just the power required to operate it.



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Westinghouse Electric & Mfg. Co.

Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Kansas City, Los Angeles, Minneapolis, New Orleans, New York, Philadelphia, Pittsburg, St. Louis, Salt Lake City, San Francisco, Seattle, Syracuse
Canada: Canadian Westinghouse Co., Ltd., Hamilton, Ont. Mexico: G. & O. Braniff Co., City of Mexico.

MEMBER OF AMERICAN ASSOCIATION ELECTRIC MOTOR MANUFACTURERS A A E M M

The accompanying illustration shows the **Palmer** adjustable thread guide for spinning and twisting. This guide is **Adjustable** in all directions and can be rigidly and permanently fixed. **Thread** boards and rails of metal which are expensive are not necessary with this **Guide**

Patented

SEND two clappers for free samples for circular.

The Palmer Revolving Guide for Wet and Dry Twisting

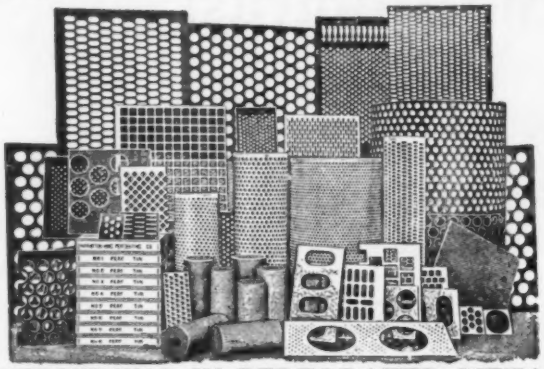
Lays the fiber closer
Makes a smoother twist
Saves power
Will outwear many wire guides

Patented

THE I. E. PALMER CO., Middletown, Conn.

PERFORATED METALS FOR TEXTILE MILLS

Used in
Dye Tubs,
Rinse Boxes,
Strainer Bottoms,
Scouring Tanks,
Steam Boxes,
Wool Scouring
Plates.



Used in
Burr Pickers,
Grabbing Machines,
Dyeing Machines,
Extractor Baskets,
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Machines.

EVERYTHING IN PERFORATED METAL

Perforated Brass and Copper for Wool Washing Machinery.
Perforated Steel (black or galvanized) for Dusters, Reels, Drying Floors,
False Bottoms, Drainers, etc., etc.
ALL SIZES OF STEEL SURFACING.

It has been our business for many years to meet every need in this line and we have both the experience and facilities to do it. As most of this work is made to order send complete specifications.

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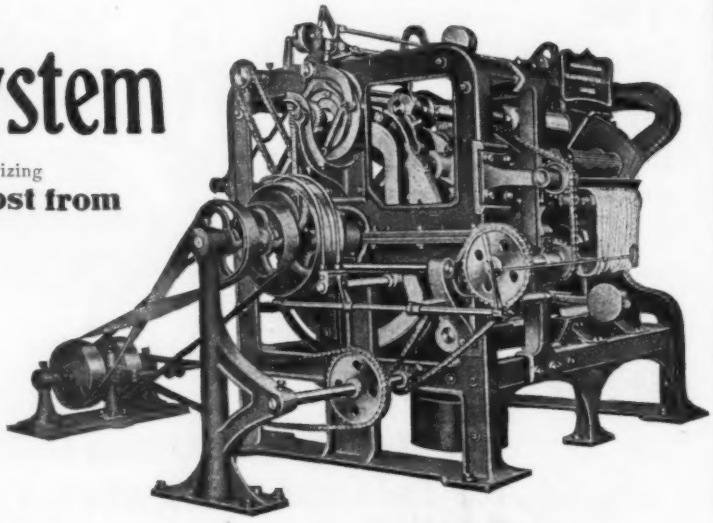
New York Office, 114 Liberty Street.

The Swiss System

of yarn mercerizing
Reduces the Cost from 20 to 50%
under that of your present method.

We invite investigation and comparison.

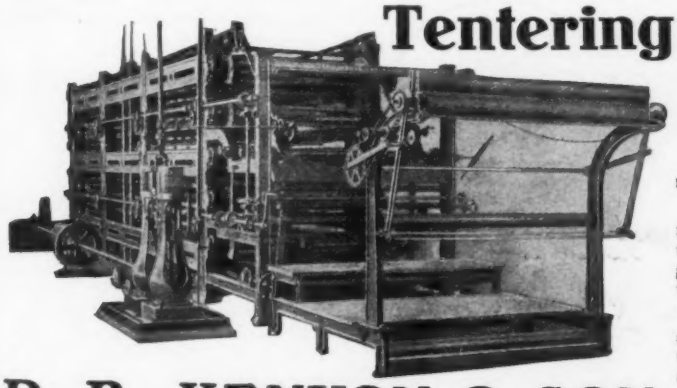


Swiss Textile Industry Company

Exclusive American Agent,

A. W. Buhlmann, Engineer

487 Broadway Silk Exchange Building New York



Tentering and Drying Machine

The cut represents one of our largest machines of the pipe system.

The wet goods in transit through the machine are thoroughly dried and tentered to the proper width. Although goods entering may be of various widths, all delivered are uniform.

The machine uses but a small amount of steam, and being substantially constructed, the repair bill is almost a negligent quantity.

It is equally efficient for heavy as well as light goods, either wide or narrow.

D. R. KENYON & SON
Raritan, New Jersey

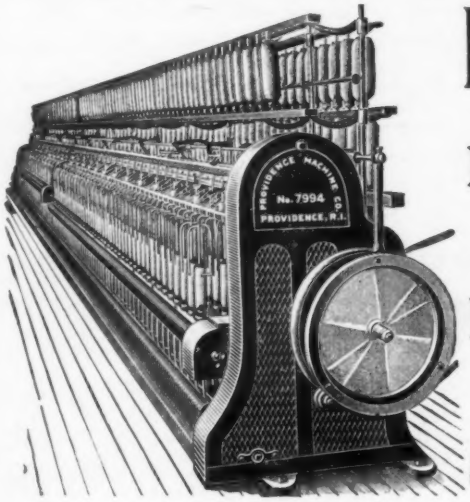
WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, **Providence, R. I.**



Providence Machine Co.

Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

AT LEAST

ONCE A YEAR

If not oftener, all belts should be thoroughly cleaned. The moving belt catches many particles of foreign matter that are in the air, and the least slipping causes them to roll into lumps which are flattened on the belt. In such condition belts cannot do good work.

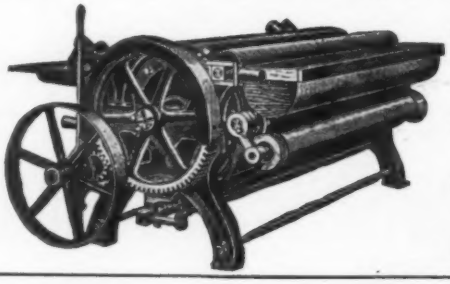
It is Easy to clean your belts with **STEMKO BELT KLEANER.** You just apply it to the belts when they are idle without taking them off the pulleys.

Send 10c for Sample Can and see for yourself.

Stephenson Mfg. Co., Specialists in Belt Dressings **Albany, N.Y.**

See Page 41.

Automatic Ironing and Pressing Machine Reduces Finishing Expenses 50%



In comparison with other machines (for use on knit goods, ribbed, flat and fleeced lined underwear) this machine will save you 50% through increased production and decreased expenses of your **Finishing Department.**

BREAKS NO BUTTONS.

It is adjustable to all grades, and gives a **finer finish** than that obtained on any other machine.

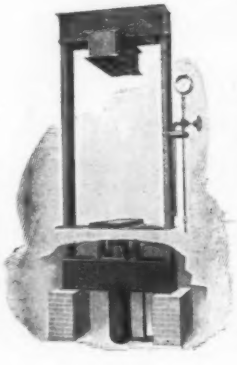
Capacity of smallest size 600 dozen per day.

Write for details and references.

The Consolidated H. S. & L. M. Company

Saugatuck, Conn.

Sole Manufacturers and owners of all rights, patterns and patents of the J. W. Craw Laundry Machinery Co.



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COLD WATER SHRINKING AND A HYDRAULIC PRESS

WILL IMPROVE THE FINISH, GIVE A MOST DESIRABLE HANDLE AND PRESERVE THE LIFE OF YOUR FABRIC. COSTS LESS THAN ANY OTHER METHOD.

WHY NOT INVESTIGATE?

AUTOMATIC SHRINKING, HANGING AND DRYING EQUIPMENT.
HYDRAULIC PRESSES FOR ALL PURPOSES.

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CHICAGO, 1200 MICHIGAN AVE.
BUFFALO, 31 CHURCH ST.

THE HYDRAULIC PRESS MFG. CO.
46 LINCOLN AVE., MOUNT GILEAD, OHIO.

THE SKYLIGHT WAY

To Increased Output

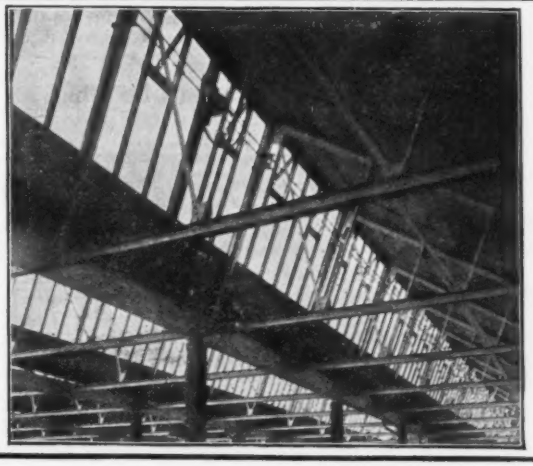
Lack of good daylight and proper ventilation invariably means poor work and less of it. Artificial light is too expensive and not so good for work or employes. You can get an abundance of free daylight and pure air in your mill by using

"Anti-Pluvius" Puttyless Skylight and the Lovell Window Operator

The skylight is made of steel, is watertight and fireproof. It is easily kept clean and in A-1 order.

Send for details and list of mills using these money savers

The G. DROUVÉ CO.,
Bridgeport, - - Conn.



LANE CANVAS STEAMING OR AGEING BASKET

Made oblong, round or square to fit any size box. Especially desirable for this use because materials and construction are such as to **withstand moisture** and **heat.**

Sold direct or through principal Supply Houses.

See our Descriptive Catalog and Price List No. 37.

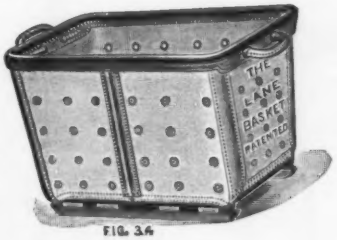


FIG. 34

MANUFACTURED ONLY BY

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Crabbing, Steam Finishing, Opening AND Folding, Tacking, Sewing, Squeezing Machines, etc.

Bleaching and Napping Machinery

BIRCH BROTHERS,

BIRCH TREE

BIRCH TREE

Somerville Machine Works, SOMERVILLE, MASS.

ALBERT BIRCH, Textile Mechanician

NO CONNECTION WITH ANY OTHER CONCERN.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building, 79 Milk St., Boston, Mass.

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ASA LEES & CO., Limited

TEXTILE MACHINERY

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

Sole Agents for

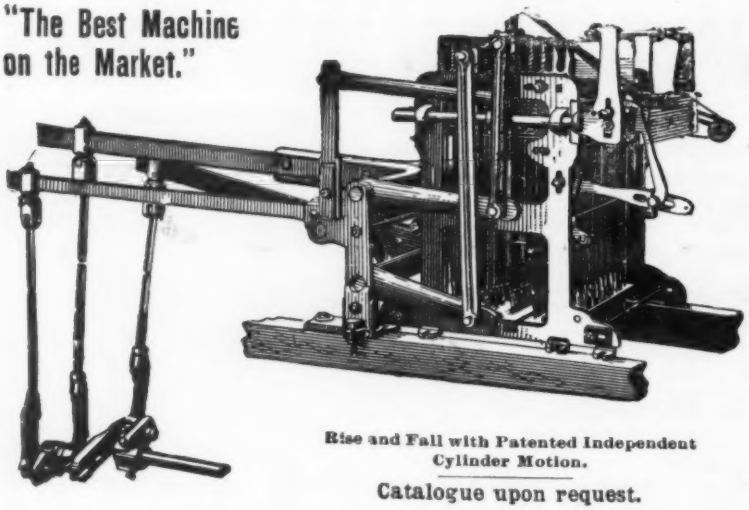
JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk.
GEO. ORME & CO., Patent Hank Indicators, etc.
WILLIAM TATHAM & CO., Waste Machinery.
R. CENTNER FILS, Heddles.
GOODBRAND & CO., Yarn Testing Machinery, Warp Reels, etc.
JOSHUA KERSHAW & SON, English Roller Skins, etc.
BUCKLEY & CROSSLEY, Spindles, Flyers and Pressers for Cotton, etc.
GEO. SMITH, Doffer Combs, etc.
BRADFORD STEEL PIN MFG. CO., Comber Pins.
THE PREMIER SPINDLE & FLYER CO., Halifax, Eng., Cops, Tubes and Spindles for Worsted, etc.

Also Agents for

JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.
DRONSFIELD BROS., Limited, Emery Wheel Grinders, Emery Fillet and Flat Grinding Machines.
COTTON CORD & VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

Pick Classes, Leather Aprons, Patent Wire Chain Aprons, Etc.

"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

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HALTON JACQUARD

Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder.

THOMAS HALTON'S SONS,

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Representative
H. A. Forbes, Paterson, N. J.

JAMES H. CLARKE GEORGE B. COCKER

COCKER MACHINERY COMPANY

Improved Warping and Beaming Machinery

of all types for Cotton Textiles.

Improved Double Acting Nappers and Felters
For Cotton and Woolen Goods.

Frankford, Penna.

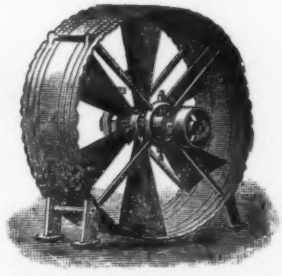
Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs

Adjusts itself to an uneven load, runs without vibration
Unusual capacity for high-class work

Bridger Hydraulic Cutting Press

Send for Catalog

Tolhurst Machine Works
Fulton St. and 6th Ave., Troy, N. Y.



Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light

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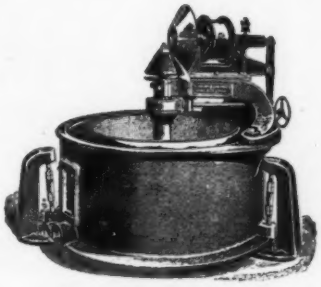

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MANUFACTURERS OF

Self Balancing

Hydro Extractors

Electric, Engine and Belt Driven

Ask for Book Giving Full Particulars

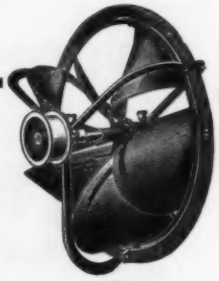
K-A Electrical Warp Stop

IS ACTIVE AND UP TO DATE

SUBSTANTIAL EQUIPMENTS NOW IN PROCESS.
REPEAT ORDERS ARE ENDORSEMENTS OF MERIT.
COMPARISON WITH OTHER WARP STOPS INVITED.
K-A STANDS FOR CERTAINTY—SAFETY—SAVING.

K-A Dept. Mossberg Wrench Company
Central Falls, R. I.

Clear the Dyehouse Atmosphere



and thereby make bigger profit and better product. Fog filled dyehouses are profit losers, so why permit this leak to go unstopped.

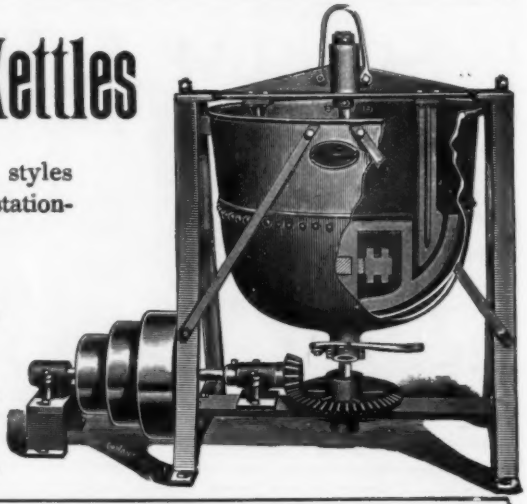
Get A Berry Wheel

The Berry System is Most Efficient and Economical for Drying.
Send for Circular T.

A. HUN BERRY, 23 West First Street, Boston.

Established 1841.

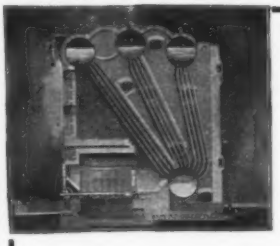
Steam Jacket Mixing Kettles



This cut represents one of our many styles of steam mixing kettles, made with stationary and removable stirrers.

E. B. BADGER & SONS CO.,
COPPERSMITHS,
66 Pitts St., - BOSTON, MASS.

Badger Fire Extinguisher.



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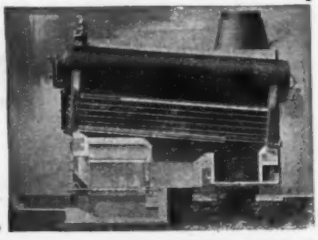
Burns Slack with Great Economy

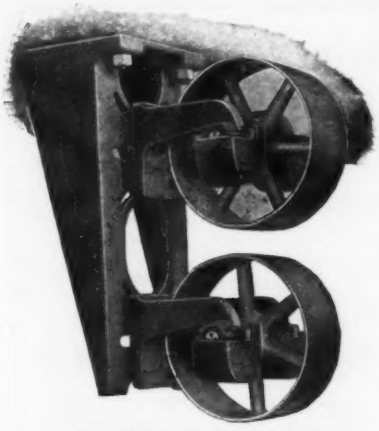
The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

MURPHY IRON WORKS

DETROIT, MICH.



Adjustable Binder Frame for belt drives to Spinning Frames, Twisters, etc.

WM. SELLERS & CO., Incorporated

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Makers of

Shafts,
Couplings,
Pulleys,
Hangers,

and all most approved appliances for the

Transmission of Power by Belts, Gears or Ropes

Catalogue upon request.

Machine Tools,
Injectors, Power Cranes.

Patented in the United States and Foreign Countries.

"If you want the best specify the

American Wrought Steel Split Pulley

with rim of one layer of metal, grooved in center, stiffened by internal central flanges, and rolled beads on edges, six duplex steel arms, radiating from a steel hub and without rivets between hub and rim. More than 1,000,000 in use giving entire satisfaction. Sold by Supply Houses everywhere."

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MADE IN THE GREATEST RANGE OF SIZES OF ANY STEEL PULLEY IN THE WORLD.

Built any size from 6" to 126" diameter with 2" to 40" face to fit any standard size shaft from 1" to 8" diameter.
Braced and reinforced at every vital point.
A pulley stronger than cast iron, a quarter the weight, 25% better belt adhesion and better all around efficiency.

Our Specialty is the Large Sizes.

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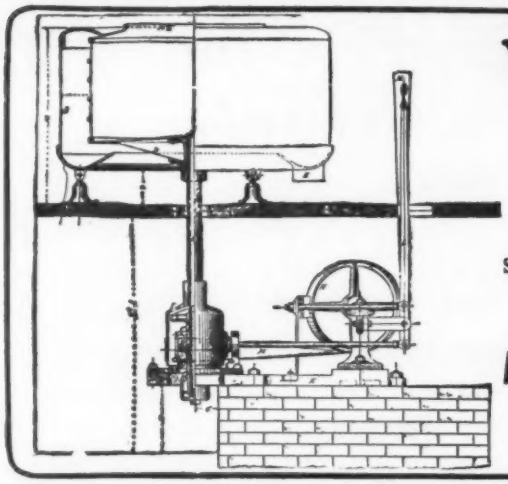
CHICAGO SALESROOM, 105-9 O. CLINTON.



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Special Machines for Acid Work.

SHAFTING, PULLEYS,
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Incorporated 1864. Founded 1845.

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Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

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Made by

Rodney Hunt Machine Co.

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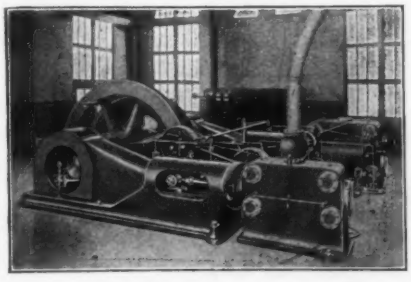
Improved Fulling Mills Washers & Dyeing Machines



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Heavy Duty Type

NOTED FOR

RELIABLE SERVICE,
LOW STEAM CONSUMPTION,
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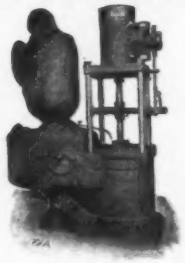

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TWIN AIR PUMP AND CONDENSER

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COTTON, WOOLEN and WORSTED

CARD CLOTHING

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You'll Get More Carding—
Have Better Yarn—
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If You Use the Henderson Card

It gives greater strength and production than any other system.

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Owners and manufacturers of the celebrated *Henderson Card* for Wool, Worsted, Cotton, Waste, Flax and asbestos. Also manufacturers of All Kinds of Woolen Machinery.

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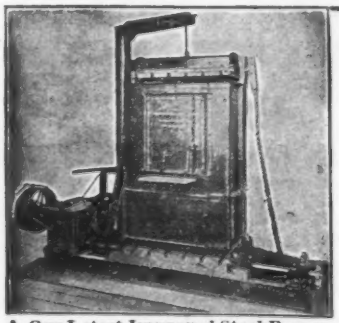

Our Latest Improved Steel Power Press with New Steel Link Chains

Minnich Baling Press

for all kinds of products.

Must turn out more bales with less labor and power than any press in the market.

Send for circular.

Minnich Machine Works,

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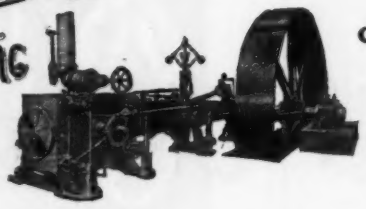
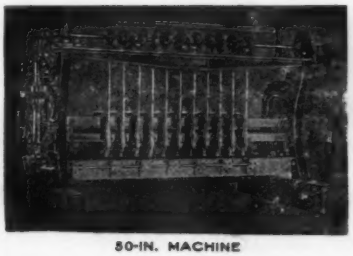
THE IMPROVED FISHKILL CORLISS ENGINE
BUILT BY THE FISHKILL LANDING MACHINE CO.
FISHKILL ON HUDSON N.Y.



For all power purposes
where high economy and
close regulation is required.

Cylinders & Valve Chests rebored in place.

General engine repairs.



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FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED
BUILT WITH ANY REQUIRED NUMBER OF NEEDLES
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PAPER SLITTING MACHINES

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MAKES WEAVE ROOMS BRIGHT

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Weavers are often allowed more pay for working in dark places.
You can reduce this expense (and that for artificial light) by using Rice's Mill White on walls and ceilings—it reflects the light and is more lasting than lead and oil.

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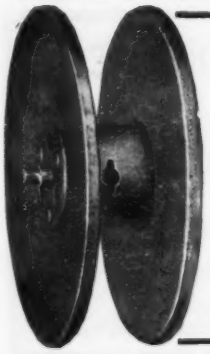

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(Patented)
MADE WITH STEEL BARREL.
Great advantage over the old fashioned cast iron or wood.
Stamped Steel Beams are up-to-date.
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High Grade Soaps and Softeners.

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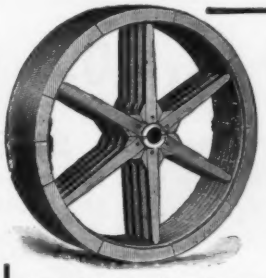

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Almond Rt. Angle Transmission
eliminates mule pulley stand and bevel gear troubles.

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Textile Machinery

Makers of Rag, Wool, Hair and Finishing Pickers, Automatic Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

Special Machinery Built. General Machinery Repairs.
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Hundreds in Service **HYDRO** Write for Circulars
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—THE KIND FOR HARD SERVICE—
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MACHINE WOOL COMBS
and
Worsted Machinery--new and repairs.
BELTING AND MILL SUPPLIES.

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Manufacturers of the
Walker Patented
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NEAT NO TROUBLE
DURABLE NO MISTAKES
ACCURATE NO READJUSTMENTS
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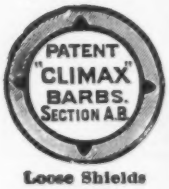
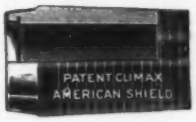
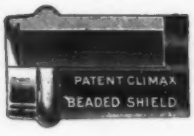
Absolutely secure combination of Shield and Bobbin guaranteed.



Loose Shields Impossible.





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The Kaumagraph method of Textile Stamping is the most rapid on the market to-day, — at the same time insuring clean, legible results **every time** on **any** fabric. *Send for sample.*

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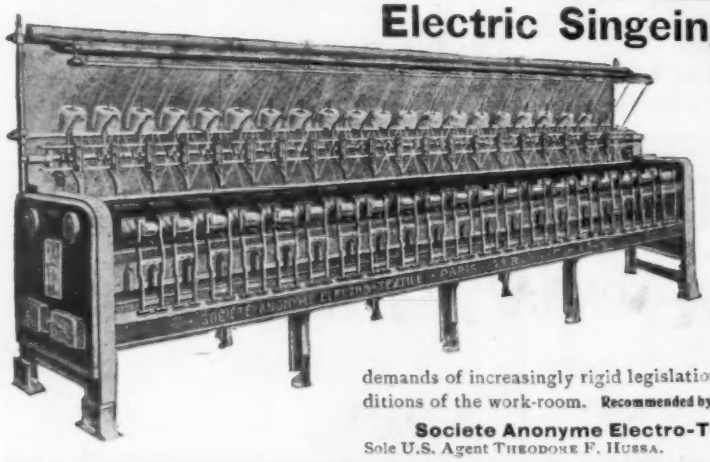

for Cotton Yarns, Worsted, Silk, Schappe, etc.

We lower your cost of production from 30 to 60%.
We produce yarns of finer quality.
We produce yarns of better color.
We give you cleaner, safer work-rooms.
Simple to operate.
The only machine that allows manufacturers to meet the demands of increasingly rigid legislation controlling the health conditions of the work-room. **Recommended by the Commissioners of Labor in France.**

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The Hygrosso

Belt Driven

Motor Driven

Repeat orders for equipment covering five million cubic feet of air space received during last week of September —

No opening up for cleaning — All working parts exposed —

Construction is strong and simple — Lasting qualities unsurpassed —

Satisfactory results obtained with least expense to operate —

Devoid of pressure pumps and kindred appliances which complicate humidifiers, wear out and need replacing —

Successfully operating in Representative mills —

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SALES OFFICE **43 LAFAYETTE STREET**

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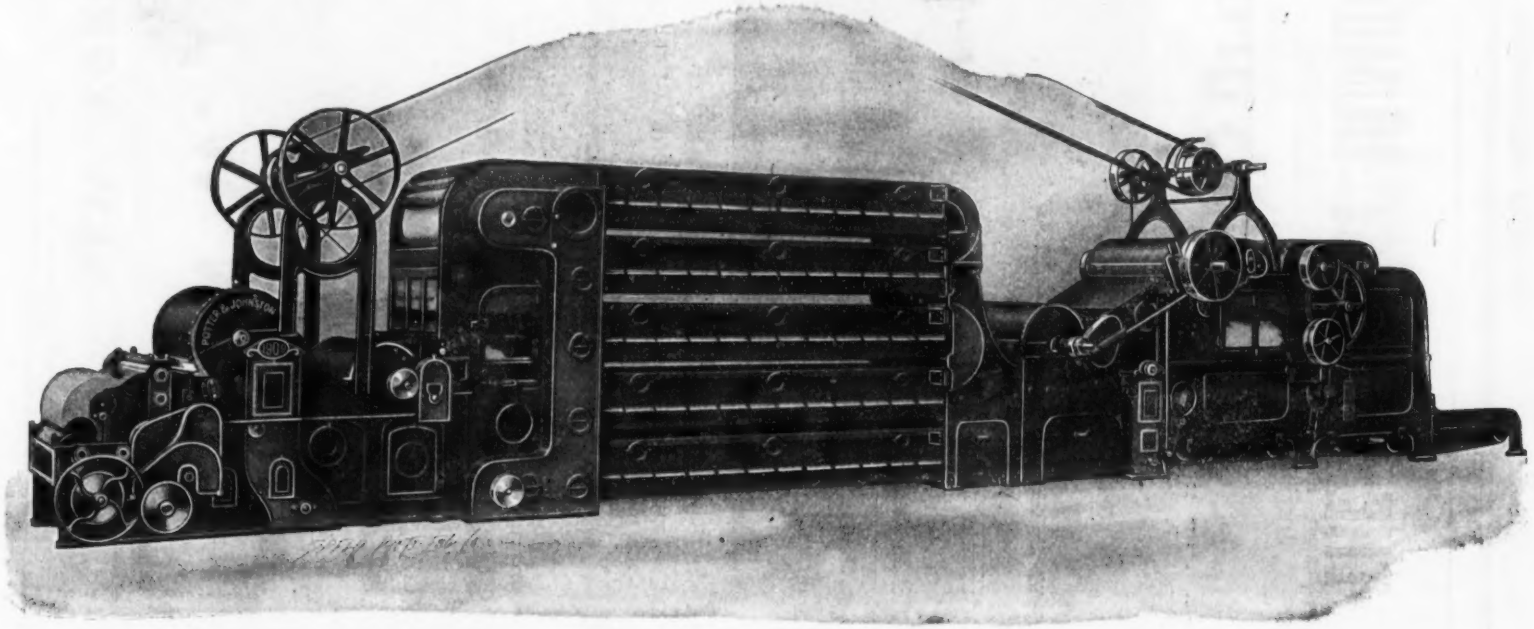
We have pleasure in introducing to Cotton Manufacturers our new line of

PICKING MACHINERY

Which embody many new and valuable features, and are of the same high class of workmanship and material which has characterized the POTTER & JOHNSTON product for many years.



Patented Combined Bale Breaker Automatic Feeder, Opener, Breaker and Automatic Cleaning Trunk.

Patented Combined Bale Breaker Automatic Feeder, Opener, Breaker and Automatic Cleaning Trunk.

We Invite Inspection
by
Manufacturers Who Are Interested.

SOUTHERN REPRESENTATIVE:
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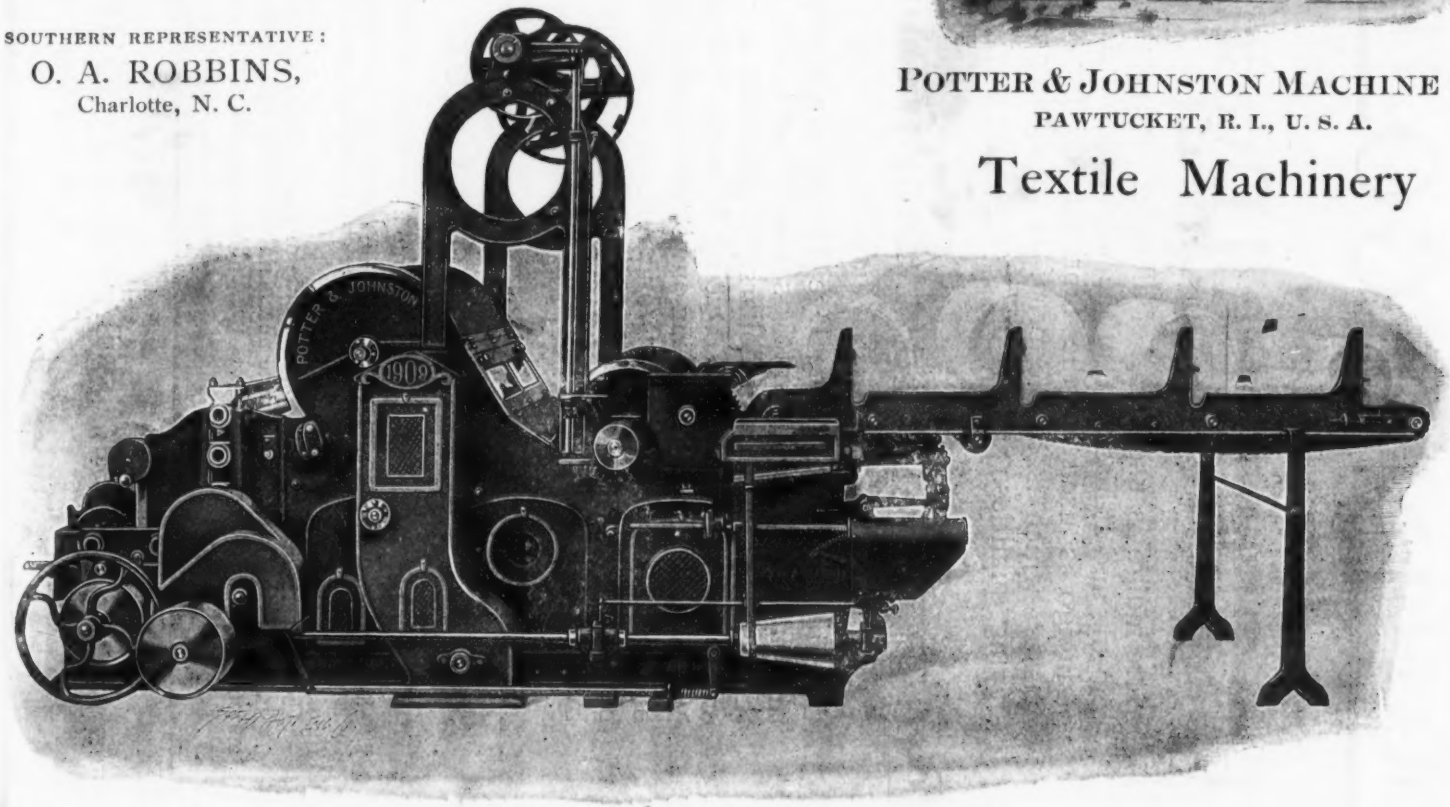
POTTER & JOHNSTON MACHINE CO.
PAWTUCKET, R. I., U. S. A.

Textile Machinery



Patented Single Beater Finisher.

INDIGO

The Oldest of All Dyestuffs

More indigo is used than of all other products for coloring and at least 95% of the world's production of indigo is used in the fabrics made for the masses, which is ample proof of its dyeing and staying qualities.

Expert Help to Manufacturers

One little mistake in the Dye House can easily turn first-class goods into "seconds" and cause the loss of hundreds of dollars. Experience covering the entire range of Dyeing is rarely found in one man. For that reason our expert specialists may be able to help you. If you think so, we should be glad to render what service we can, gratis, either by mail or a visit to your plant.

To Test Indigo on Cotton

Put a little piece of Indigo-dyed cotton into a dry test tube or on a porcelain plate aud heat very slowly over a Bunsen Gas Burner or some other flame. The Indigo will sublime and show heavy purplish fumes.

Another very simple test is to put a little of the Indigo-dyed cotton into a porcelain dish or on a white porcelain plate and light it with a match and let it burn. If Indigo is present the porcelain will show a greenish blue film.

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BADISCHE COMPANY
128 Duane St., New York.

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TEXTILE WORLD RECORD

Published on the 12th of each month by

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SAMUEL S. DALE, Editor.

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Copy for regular advertisements must reach publication office by the 25th of month preceding date of issue to insure proper attention. Transient ads., Wants, For Sale, etc., to go on Classified pages can be taken up to the 4th of the month of publication. We are always pleased to co-operate with advertisers in preparing attractive advertisements, and strongly recommend frequent change of copy, which increases the interest, and, therefore, the beneficial results of the advertising. We will cheerfully change copy as often as may be desired, providing it reaches us in time, but we cannot promise changes for next issue unless received as above stated.

Advertising rates on application.

Official American Textile Directory

Published annually, in two editions. Office, Large Size, **$3.00. Travelers'**, Flexible, Smaller, **$2.00.**

A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute Mills of the United States, Canada and Mexico, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

American Directory of the Knitting Trade.

Published Annually in a handy size for the pocket, $1.50.

It contains **full reports of every knitting mill** in the United States and Canada, giving capitalization, names of the officers, including superintendent and buyer; kind of goods made; number of knitting machines, whether latch or spring needle; number of sewing machines; whether the mill dyes or bleaches or finishes; kind of power; number employed; selling agent; kind of yarn bought; lists of the jobbers, manufacturers' selling agents, commission merchants, department stores and large retailers handling knit goods and the name of the person in charge of the knit goods department. List of dyers, bleachers, finishers, printers, etc., making a specialty of knit goods work. Special copyrighted maps of the mill districts, showing the cities and towns where there are knitting mills. It is indexed so any town or mill may be quickly found.

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D and M BLEACHER'S BLUE

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Our Other Specialties are

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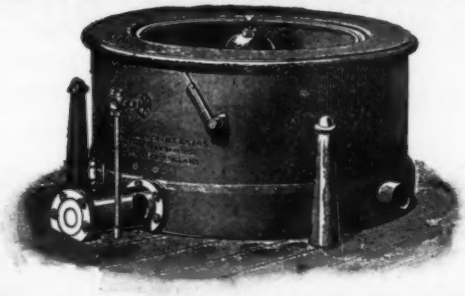
OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



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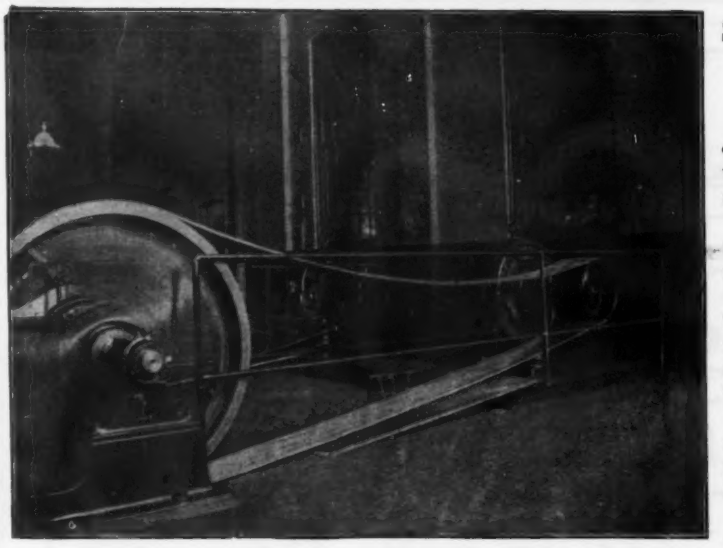

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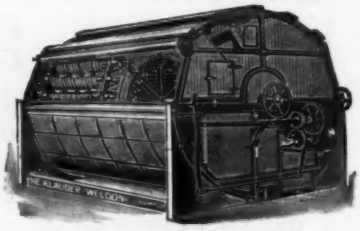

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The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accountants.
American Cost Accountant Co.
Air Compressors.
Gardner Gov. & Air C. Co.
Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Fries, John W.
Parks, G. M., Co.
Schutte & Koerting Co.
Architects and Mill Engineers.
Dean, F. W.
Ferguson, John W.
Cramer, Stuart W.
Asphalt Tanks.
Scaife, W. B., & Sons.
Automatic Feeds for Cotton and Wool.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.
Bale Ties.
Acme Steel Goods Co.
Reliable Tie Co.
Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy. Co.
Minnich Machine Works.
Bandings.
—See under Yarns.
Baskets.
Lane, W. T., & Bro.
Beams (Steel).
Mossberg, Frank, Co.
Bearing Metals.
Dodge Mfg. Co.
Belting.
Boston Belting Co.
Burnham, E. E., Co.
Gandy Belting Co.
Rhoades, J. E., & Sons.
Schierin Co., Chas. A.
Shultz Belting Co.
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Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jos., Crucible Co.
Schieren, Chas. A., Co.
Shultz Belting Co.
Stephenson Mfg. Co.
Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.
Wackerow, F. C.
Bindings.
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Bleaching Kiers.
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Birch Bros. (Albert Birch, prop.)
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.
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Bosson & Lane.
Carbondale Calcium Co.
Danker & Marston.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.
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American Blower Co.
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Dean Bros. Steam Pump Works.
Philadelphia Drying Machinery Co.
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Sirocco Engineering Co.
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American Supply Co.
American Textile Specialty Mchy. Co.
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Lestershire Spool & Bobbin Co.
Mossberg, Frank, Co.
Speed & Stephenson.
Tebbets, E. L., & Co.
Wilson & Co.
Bobbin Winders.
Lever, Oswald Co.
Universal Winding Co.
Boilers.
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Boxes, Cloth Boards, Etc.
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Box Strapping.
Acme Steel Goods Co.
Braiding Machinery.
Mason Mfg. Co.
New England Butt Co.
Textile Machine Works.
Braids.
—See Tapes, Braids and Edgings.
Brass Hinges.
Root, C. J., Co.
Bridges.
Scaife, W. B., & Sons.
Brushers.
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Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.
Burr Pickers.
Curtis & Marble Machine Co.
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Butterworth, H. W., & Sons Co.
Somerville Mach. Wks, (Albert Birch, prop.)
Taunton-New Bedford Copper Co.
Textile Finishing Mchy. Co.
—See also Dyeing, Bleaching, Machinery, etc.
Canvas Baskets.
Lane, W. T., & Bro.
Cap Spindles.
American Textile Specialty Mchy. Co.
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Carbonizing Machinery.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schuchardt & Schutte.
Somerville Mach. Wks. (Albert Birch, prop.)
Tolhurst Machine Works.
Card Clothing.
Ashworth Bros.
Buhlmann, A. W.
Howard Bros. Mfg. Co.
Leigh, Evan A.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Speed & Stephenson.
Carded Cotton.
Blaisdell, S., Jr., Company.
Card Feeds.
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Smith & Furbush Machine Co.
Richards, Atkinson & Haserick.
Carders' Tools.
Brown, Wm. H., Co.
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Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
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Cell Drier Machine Co.
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Roessler & Hasslacher Chemical Co.
Chemists.
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Mossberg Wrench Co.
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Darrow Mann Co.
Coal Analysis.
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Combs (Wool and Cotton).
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Philadelphia Textile Machinery Co
Richards, Atkinson & Haserick.
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Speed & Stephenson.
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Dean Bros. Steam Pump Works.
Conditioning of Textile Fabrics.
U. S. Silk Conditioning Works.
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Dodge Mfg. Co.
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Sturtevant, B. F., Co.
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Cop Tubes.
American Textile Specialty Mchy. Co.
Buhlmann, A. W.
Hall, F. A., & P.
—See Paper Tubes.

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Coppersmiths.
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Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Harrington & King Perforating Co.
Textile Finishing Machinery Co.
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Draper Company.
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Elliott & Hall.
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Entwistle, T. C., Co.
Firth, William, Co.
Haskell-Dawes Machine Co.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
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Textile Machinery Co.
Walker Measuring Co.
Whitin Machine Works.
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Cotton Openers and Lappers.
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Bosson & Lane.
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Danker & Marston.
Harding, Fancourt & Scull.
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Schofield, Edwin F.
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Schuhardt & Schutte.
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Dixon, Jos., Crucible Co.
Lowell Crayon Co.
Creosote.
Carbolineum Wood Preserving Co.
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Adams, A. L.
Cameron Machine Co.
Cylinder Oil (Superheated Steam).
Power Specialty Co.
Disinfectants.
Seydel Mfg. Co., The.
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Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford Co., The.
Dobby Chain.
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Speed & Stephenson.
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Birch, Arthur, Arlington Mch. Wks.
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Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
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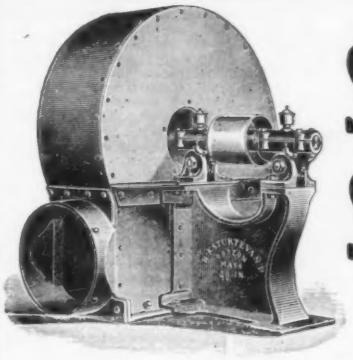
American Blower Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Firth & Foster Co.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Works.
Lorimer's, The Wm. H., & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Solway Dyeing & Textile Co.
Standard Bleachery Co.
Utica Willowvale Bleaching Co.
Western Thread & Dye Works.
Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co.
American Laundry Mchy. Mfg. Co.
Arlington Mch. Wks. (Arthur Birch prop.)
Birch, Albert, Somerville Mach. Wks.
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Consolidated H. S. and L. M. Co.
Curtis & Marble Machine Co.
Delahunty Dyeing Mach. Co.
Dyeing & Finishing Machine Works.
Entwistle, T. C., Co.
Franklin Process Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
National Laundry Machinery Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Reliable Foundry & Mch. Co.
Rodney Hunt Mach. Co.
Schwartz, L. H. A., & Co.
Schuhardt & Schutte.
Smith, Drum & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Sturtevant, B. F., Co. (Drying).
Taylor & Fenn Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Dye House Cans.
Hill, James, Mfg. Co.
Dye House Trucks.
Bailey, Frank.
Dye Sticks.
Bailey, Frank.
Haedrich, E. M.
Klauder-Weldon Dyeing Machine Co.
Dye Tubs.
——See Tanks, Tubs and Vats.
Dyestuffs and Chemicals.
American Dyewood Co.
Arabol Manufacturing Co.
Atteaux, F. E., & Co.
Badische Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Carbondale Calcium Co.
Cassella Color Co.
Danker & Marston.
Farbenfabriken of Elberfeld Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Jamaica Dyewood & Chemical Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Read Holliday & Sons, Ltd.
Roessler & Hasslacher Chemical Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
Young, J. S., & Co., Ltd.
Dynamos.
——See Electric Lighting.
Edgings.
——See Tapes, Braids and Edgings.
Electrical Construction.
Allis-Chalmers Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.
Electrical Heating Devices.
Crocker-Wheeler Co.
General Electric Co.
Electric Driven Pumps.
Dean Bros. Steam Pump Works.
General Electric Co.
Electric Fans.
Allis-Chalmers Co.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.
Electric Hoists.
Crocker-Wheeler Co.
General Electric Co.
Electric Lighting.
Allis-Chalmers Co.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Nernst Lamp Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.
Electric Motors.
——See Motors (Electric).
Electricity Neutralized.
Chapman Electric Neutralizer Co.

Alphabetical Advertising Index, with page numbers, follows this list.



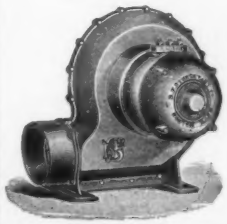
Sturtevant Stock Fans

Are Standardized

Duplicate parts always on hand for immediate shipment.

Nearly every fan use for conveying, ventilating, exhausting, or drying, can be met by one of our stock fans always ready for immediate shipment from our works at Hyde Park, Mass., or from our Philadelphia and Chicago storerooms.

Many of the best mills in the country are equipped with Sturtevant Fans installed by our engineers to meet individual conditions. Our recommendations are not based on guess work, but on the result of years of experience in meeting similar problems. Your requirements can probably be met by one of our stock fans. If not, we build apparatus to order. Correspondence invited.



B. F. Sturtevant Company

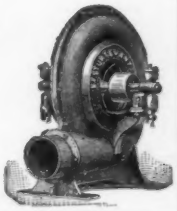
Boston, Mass.

General Office and Works, Hyde Park, Mass.

Builders of

Fans, Fan Systems and Allied Products

(759)



Electrolyzer.
National Laundry Machinery Co.

Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Employees' Time Recorders.
Pettes & Randall Co.

Engines.
—See Steam Engines.

Engine Repairs.
Fishkill Landing Machine Co.

Evaporators.
Zaremba Co.

Exhaust Heads.
Sturtevant, B. F., Co.
Power Specialty Co.

Fans—Exhaust and Ventilating.
—See Ventilating Apparatus.

Feed Water Heaters.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
Dodge Mfg. Co.
Scaife, W. B., & Sons.

Feeds.
—See Automatic Feeds.

Feed Water Regulators.
Berry Engineering Co.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Fender Boards.
Case Bros.

Filters.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Finishing Compounds.
—See Sizings.

Finishing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.

Fire Hose.
Boston Belting Co.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.
Haskell-Dawes Machine Co.

Fluted Rolls.
Bates & Robinson Machine Co.
Hood, R. H., Company.
Leigh, Evan A.
Jefferson, Edward & Brother.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Calder Machine Works.
Hall, F. A. & P.
Hopkins Machine Works.
Jefferson, Edward, & Brother.
Leigh, Evan A.
Speed & Stephenson.
Textile Machinery Co.

Fly Wheels.
Dodge Mfg. Co.

Forges.
Sturtevant, B. F., Co.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans Friction Cone Co.

Fuel.
Darrow Mann Co.

Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Buhlmann, A. W.
Hopkins Machine Works.
Hunt Mach. Co., Rodney.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Hunter, James, Machine Co.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
American Blower Co.
Sturtevant, B. F., Co.

Gaskets (Superheated Steam).
Power Specialty Co.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Dodge Mfg. Co.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
American Blower Co.
Buffalo Forge Co.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Governors.
Gardner Gov. & Air C. Co.

Greases.
N. Y. & N. J. Lubricant Co.

Harness Twine.
Moore, C., & Co.

Harness and Frames.
Steel Heddle Mfg. Co.
Garland Mfg. Co.

Heating.
—See Ventilating Apparatus.

Heddles.
Howard Bros. Mfg. Co.
Richards, Atkinson & Haserick.
Steel Heddle Mfg. Co.

Hoisting Apparatus.
Economy Engineering Co.

Hosiery Boards.
Pearson, J. T.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Fries, John W.
Parks, G. M., Co.
Schutte & Koerting Co.

Hydraulic Rams.
Power Specialty Co.
Walworth Mfg. Co.

Hydro Extractors.
American Laundry Mchy. Mfg. Co.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Dienelt & Eisenhardt, Inc.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Schaum & Uhlinger.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Ice Machines.
Remington Machine Co.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.

Ironing Machines for Knit Goods.
American Laundry Machinery Mfg. Co.

Jacquards.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines Crochet, Etc.
American Laundry Machinery Mfg. Co.
Hoffman, U. S.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Ainsley Knitting Machine Co.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Climax Machine Co.
Cooper, Chas.
Crane Mfg. Co.
Eppliers, John, Mach. Works.
Excelsior Knitting Machine Mfg. Co.
General Machine Works.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, E., Mfg. Co.
Lamb Knitting Mach. Mfg. Co.
Leckie, Jas., & Son.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Spindler, E. O.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros. Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Sons.
Brinton, H., & Co.
Continental Latch Needle Company
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Lamb Knitting Machine Mfg. Co.
Keystone Latch Needle Co.
Mayo Knitting Machine & Needle Co.
Spindler, E. O.
Wardwell Needle Co.

Labels.
Dennison Mfg. Co.
Kimball, A., Co.

Lamps, Electric.
Buckeye Electric Co.
Cooper Hewitt Electric Co.
General Electric Co.
Nernst Lamp Co.
Westinghouse Electric & Mfg. Co.

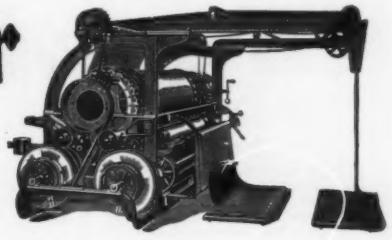
Lockers.
Williamson, W. S.

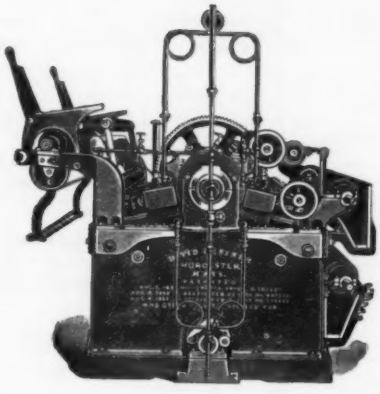
Loom Pickers.
Garland Mfg. Co.
Jacobs, E. H., & Co.

Alphabetical Advertising Index, with page numbers, follows this list.

David Gessner

Worcester, Mass.

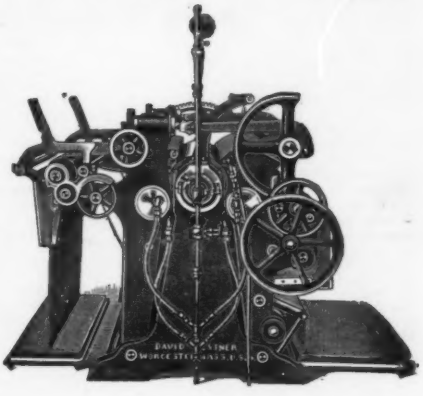




Latest Improved Cloth Finishing Machinery

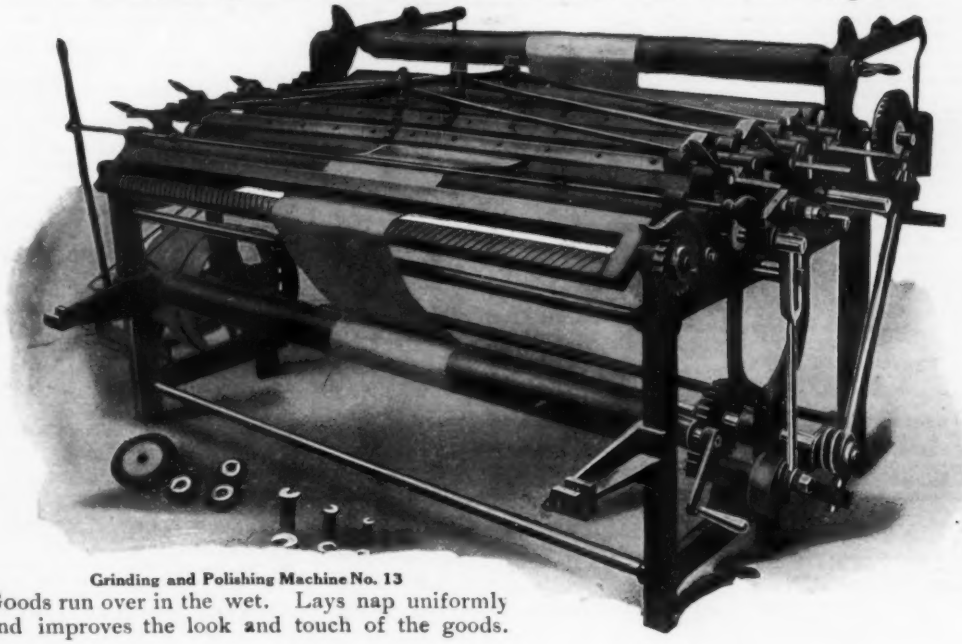
—

Napping Machines and Presses a Specialty



Schuchardt & Schutte, 90 West St., New York

Finishing Machinery—Latest and Best Types



Grinding and Polishing Machine No. 13

Goods run over in the wet. Lays nap uniformly and improves the look and touch of the goods.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Richards, Atkinson & Haserick.
Stafford Co., The.
Whitin Machine Works.

Loopers.
Beattie Manufacturing Co.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.

Lubricators.
The United States Mica Co.
Scholler Bros.
Walworth Mfg. Co.

Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

Machine Designers.
Adams, A. L.
Cameron Machine Co.

Machinery Dealers.
Jefferson, Ed., & Bro.
Schofield, Geo. L.
Speed & Stephenson.
Taylor, James.

Machinists.
Adams, A. L.
Calder Machine Works.
Cameron Machine Co.

Machinists' Tools.
Whiton, The D. E., Co.

Mails.
Walder, J.

Marking Pots.
Bradley, A. J.

Marking Tickets.
Dennison Mfg. Co.
Kimball, A., Co.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.

Mechanical Draft.
American Blower Co.
Green Fuel Economizer Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Dodge Mfg. Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
American Ship Windlass Co.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorimer, Wm. H., Sons Co.

Mercerizing Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Builders and Engineers.
Ferguson, John W.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Buckley's, Benjamin, Sons.
Burnham, E. E., & Co.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Jacobs, E. H., & Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
N. Y. & N. J. Lubricant Co.
Philadelphia Drying Machinery Co.
Pratt, R. C.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Richardson Bros.
Schierin, Chas. A., Co.
Shaw, Victor, Ring Traveler Co.
Speed & Stephenson.
Stephenson Mfg. Co.
Sweet & Doyle.
Thurston, A. G., & Son.
Vandegrift, Elias T.
Wackerow, F. C.
Walworth Manufacturing Co.

Motors (Electric).
Crocker-Wheeler Co.
Diehl Manufacturing Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Napping Machinery.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Cocker Machinery Co.
Curtis & Marble Machine Co.
Gessner, David.
Leigh, Evan A.
Parks & Woolson Machine Co.

Noils (Silk).
Ryle, Wm., & Co.

Non-Fluid Oils.
N. Y. & N. J. Lubricant Co.

Office Supplies.
Dennison Mfg. Co.

Oilless Bearings.
Arguto Oilless Bearing Co.

Oil Cups.
Walworth Manufacturing Co.

Oil Pumps.
Eclipse Oil Pump Co.

Oils.
Borne, Scrymser Co.
Burckhardt & Co.
Harding, Fancourt & Scull.
New York & New Jersey Lubricant Co.
Scholler Bros.
Stephenson Mfg. Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Overseaming Machines.
Merrow Machine Co.
Singer Sewing Machine Co.

Packings (Metallic).
Power Specialty Co.

Paints.
Brown, Chas. H., Paint Co.
U. S. Gutta Percha Paint Co.

Paints (Wood Preserving).
Carbolineum Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper and Cloth Slitters.
Cameron Machine Co.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.

Perforated Metals.
Harrington & King Perforating Co.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pipes and Fittings.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Pneumatic Conveying.
—See Ventilating.

Portable Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.

Power Transmission Machinery.
Allis-Chalmers Co.
Almond, T. W., Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Creason, Geo. V., Company.
Dodge Mfg. Co.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Oneida Steel Pulley Co.
Philadelphia Drying Machinery Co.
Phillips Pressed Steel Pulley Works.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Potter & Johnson Mch. Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.

Preservatives.
Carbolineum Wood Preserving Co.

Presses.
Boomer & Boschert Press Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Consolidated H. S. and L. M. Co.
Curtis & Marble Machine Co.
Dyeing & Finishing Machine Works.
Gessner, David.
Hart, Charles.
Hoffman, U. S., Co.
Hydraulic Press Mfg. Co.
Minnich Machine Works.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

Press Boards.
Case Bros., Inc.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Producer Gas Power Plants.
Cameron Machine Co.

Pulleys.
—See Power Transmission Machinery.

Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.
Lawrence Pump & Engine Co.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Pump Governors.
Crosby Steam Gage & Valve Co.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.

Purifying & Filtration Plants.
Dodge Mfg. Co.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Quillers.
Buhlmann, A. W.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Raveling Machines.
American Raveler Co.
Arguto Oilless Bearing Co.

Raw Hide Gears.
New Process Raw Hide Co.

Reed and Harness Manufacturers.
American Supply Co.
Nuttall, George.
Walder, J.

Alphabetical Advertising Index, with page numbers, follows this list.

Mica Flake Lubricant

Reduces Friction, Cools Hot Journals While Running, Saves Oil.

Pure White and Cleanly

The best way to lubricate properly and efficiently is to mix Mica Flake with your lubricating oil or grease. It goes right to the cause of friction and reduces it.

Mica Flake decreases the consumption of oil fully 40 percent.

We guarantee Mica Flake to give satisfactory results.

We've a way of proving it.

Send us order for a can on trial for 30 days. If not satisfactory, return at our expense and your obligation ceases.

Packed in 25, 10 and 5 pound cans, and 100 pound sacks.

The United States Mica Co.,
238-248 La Salle Street,
Write for Folder T W R **CHICAGO**

Richards

We import a most complete and extensive line of **Cotton, Silk, Worsted and Fibre Machinery, Mill Supplies, Egyptian Cotton and Burlaps.** Representing the leading foreign manufacturers and dealers and keep thoroughly

Atkinson

up with the latest improvements in Textile Machines. We should be pleased to communicate with parties contemplating

&

any changes or additions in mill equipments and to send circulars describing at length our machines and supplies.

Haserick

152-8 CONGRESS STREET, BOSTON
8 CURRER STREET, BRADFORD, ENG.
PHILADELPHIA OFFICE, THE ARCADE

Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Ribbon Cutters.
Cameron Machine Co.

Ribbons.
Cheney Bros.

Ring Travelers.
Shaw, Victor, Ring Traveler Co.

Roofing.
Barrett Mfg. Co.

Roll Coverers.
Burnham, E. E., & Co.

Roller Logs.
Hartwell, G. E.

Rope.
Dodge Mfg. Co.

Rope Dressing and Preservative.
Cling-Surface Co.

Rope Transmission.
Cresson, Geo. V., Company
Dodge Mfg. Co.

Roving Cans.
Hill, James, Mfg. Co.
Standard Fibre Co.

Roving Reels.
Scott, Henry L., & Co.

Rubber Covered Rollers.
Boston Belting Co.

Sash Cord Braiders.
Mason Mfg. Co.

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Catlin & Co.
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Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Whitman, William, & Co.

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can be tightened so as to hold itself in place without collars, set-screws or blocks nailed on the beam. It will tighten on beam and comes true in circle. Listing cannot get between the beam and head. Practically a one-piece head made strong and will outlast any beam head made, with the same usage. Can be set in one minute and stays when it is set. Put on without taking the beam apart. A set of beam heads sent to any factory in the U. S. upon application with thirty days approval. In ordering send diameter of beam and diameter of head wanted.

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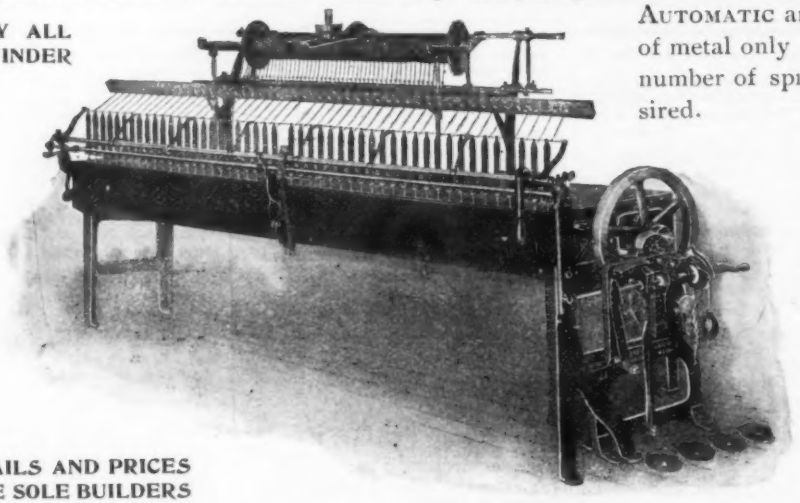

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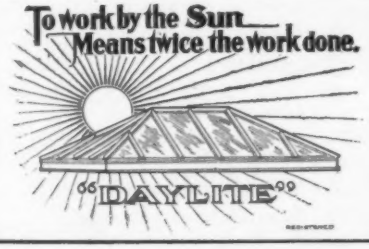

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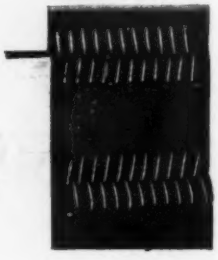

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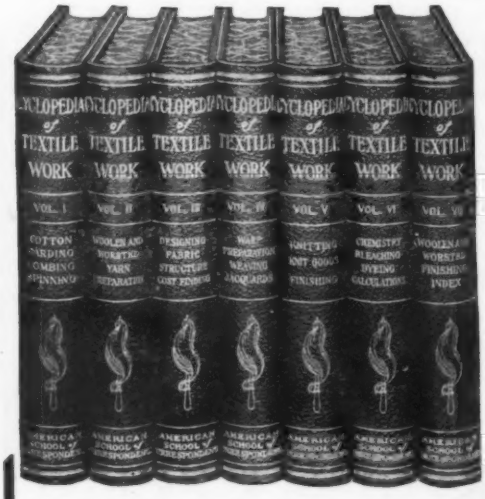

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Agent or Superintendent of a cotton mill; worked on drills, shirtings, sheetings, sateens, both warp and filling face; familiar with both American and English makes of machinery; will not go West, South or Canada; 47 years of age, married; good reference. 4470, Textile World Record, Boston, Mass.

Superintendent; worked on lawns, dimities, lenos, checks, cam and dobby looms, huck, crash, Turkish towels, specialty on jacquard work, damask, portieres, satin and marseilles quilts, crochets, etc.; familiar with all makes of carding and spinning machinery, also C. & K. looms, Lewiston, Mason, K. & L., Draper's single and double left jacquards; understands bleaching and finishing; 40 years of age, married; good reference. 4351, Textile World Record, Boston, Mass.

Superintendent of a cotton mill; worked on plain cotton goods, automobile tire ducks, also yarns; familiar with all kinds of American and English makes of machinery; good reference; 47 years of age, married. 4179, Textile World Record, Boston, Mass.

Superintendent or Assistant Superintendent; worked on combed and carded hosiery, and warp, fine and coarse; familiar with all makes of machinery; will not go West or Canada; 25 years of age, married; good reference. 4423, Textile World Record, Boston, Mass.

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Designer or Boss Weaver; worked on beavers, overcoatings, kerseys, men's wear and ladies' dress goods; familiar with Knowles and plain Crompton looms; will not go to Penn., West, South or Canada; 30 years of age, married; good reference. 4409, Textile World Record, Boston, Mass.

Wool and Worsted Designer, assistant superintendent in a large or superintendent in a small mill; worked on high grade woolen suitings, cheviots, worsted suitings and trouserings, woolen and worsted dress goods, overcoatings, cotton mixes, etc.; will not go South; 29 years of age; good reference. 4352, Textile World Record, Boston, Mass.

Worsted Designer or assistant; will not go to N. Y., N. J., West, South or Canada; 23 years of age; good reference. 4414, Textile World Record, Boston, Mass.

WOOLEN SUPERINTENDENTS.

Woolen Superintendent and designer or assistant superintendent in a large mill; worked on all kinds of plain and fancy dress goods, coverts, broad cloths, cotton warp beavers, cloakings, and low grade cassimeres; will not go to Pennsylvania, West, South or Canada; 55 years of age; good reference.
4748, Textile World Record, Boston, Mass.

Woolen Superintendent or superintendent and designer; worked on men's wear and dress goods, both woolen and worsted, heavy and light weight; will not go West, or South; 47 years of age, married; good reference.
4765, Textile World Record, Boston, Mass.

Woolen Superintendent or designer; worked on worsteds and woolens for men's wear; almost everything that is made in this line; familiar with all kinds of English and American makes of machinery; 31 years of age, married; good reference.
4766, Textile World Record, Boston, Mass.

Woolen Assistant Superintendent, designer, or boss weaver; worked on woolens of all kinds, unions in fancy patterns, worsteds, cottons, lenos, lappetts, etc.; familiar with all makes of machinery; will not go to Maine or Canada; 46 years of age, married; good reference.
4745, Textile World Record, Boston, Mass.

Assistant Superintendent of small worsted mill; worked on worsted serges, cheviots, clays, kerseys, flannels and undressed worsteds; familiar with any of the Standard American makes of machines; 23 years of age; good reference.
4750, Textile World Record, Boston, Mass.

Woolen Superintendent and designer; worked on all kinds of goods, and worsted resist piece dyes a specialty; 43 years of age, married; good reference.
4757, Textile World Record, Boston, Mass.

Woolen Superintendent, assistant superintendent, or designer; worked on woolens, men's wear, worsteds, dress goods, meltons, coverts, etc.; familiar with all American makes of machinery; 47 years of age, married; good reference.
4742, Textile World Record, Boston, Mass.

Superintendent or Agent; worked on woolen, worsted and cotton hosiery; familiar with all makes of machinery; 47 years of age, married; good reference. 4456, Textile World Record, Boston, Mass.

Superintendent; worked on fancy worsteds and woolens, plain and fancy serges, piece dyes, mercerized and resist colored piece dyes, in fact all classes of men's wear; familiar with all kinds of machinery used in the weaving of the above goods; will not go to New Hampshire, Vermont, Pennsylvania, New York, New Jersey, West, South or Canada; 46 years of age, married, English; can speak German fluently; good reference. 4172, Textile World Record, Boston, Mass.

Superintendent or Agent; worked on woolens and worsteds for men's and women's wear; familiar with all kinds of machinery; will not go to Penn., N. Y., N. J., West, South or Canada; 43 years of age, married; good reference. 4424, Textile World Record, Boston, Mass.

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Superintendent or foreman in knitting mill, or any executive position in knitting business; worked on gloves, mittens and novelties, in saxony, worsted and wool, worsted and saxony toques, hockey caps, men's, women's and children's sweater coats and hosiery; familiar with all makes of machinery; prefers West or Canada; good reference; 28 years of age, married.
4735, Textile World Record, Boston, Mass.

Superintendent or foreman in a knitting mill; worked on high grade ladies', misses', men's and boy's sweaters, jackets, sweater coats, blouses, skirts, mufflers, toques, mittens, etc.; familiar with all makes of jacquard and flat knitting machines, circulars and ribbers; also able to look after the finishing department; prefers West; 30 years of age; good reference.
4746, Textile World Record, Boston, Mass.

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4764, Textile World Record, Boston, Mass.

Overseer or Fixer on knitting machines; worked on worsted, cotton, merino and mercerized underwear; familiar with Scott & Williams, McMichael, Wildman, Snyder, Fisher, Cooper circular spring needle and Tompkins spring needle on balbriggans; 31 years of age, married; good reference.
4763, Textile World Record, Boston, Mass.

Hosiery Mill Superintendent or boss dyer for large mill, running on aniline blacks and colors; worked on boys', misses' and children's, 1 and 1 and 2 and 1 ribbed hose, ladies' hose and men's half hose from 108 to 200 needle; familiar with all makes of machinery; 37 years of age, married; good reference. 4190, Textile World Record, Boston, Mass.

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AN OVERSEER OF KNITTING

seventeen years experience, Swiss, thoroughly familiar with the construction and power manufacture of knit goods, desires a situation suited to his ability. Possesses two patent rights and can furnish first class references. Is capable of taking charge of the equipment and organization of a mill. Address "Hanauer," Hotel de Rennes, a Nantes (Loire Inferieure) France.

Overseer of Finishing on hosiery; worked on all kinds of seamless and fancy goods; will not go to Maine, New Hampshire, Vermont, Connecticut, South or Canada; 27 years of age; good reference.
4744, Textile World Record, Boston, Mass.

Fixer on Seamless hose machines; familiar with Acme and Mayo machines; 28 years of age, married; good reference.
4767, Textile World Record, Boston, Mass.

Superintendent or overseer of knitting; worked on everything from silk to plush; specialty is single thread and plated or wool work; familiar with all makes of both flat and circular machines; 44 years of age, married; good reference. 4181, Textile World Record, Boston, Mass.

Superintendent or boss knitter in large mill; worked on worsted, wool, shoddy, plaited, cotton, lisle, mercerized and silk goods; familiar with Acme, Standard, Victor, Scott & Williams, and several other makes of machinery; also standard ribbers, loopers and sewing machines; 35 years of age, married; good reference. 4168, Textile World Record, Boston, Mass.

Superintendent, boss knitter or fixer; worked on all classes of ladies', misses', half hose; plain, fancy and lace from 84 to 220 needle; cotton, wool, lisle, worsted, mercerized, silk and merino; familiar with Scott & Williams, Jenks, Standard, Mayo, Branson, Hemphill, Boss, Brinton, Hepworth & Beattie loopers; Murphy, International, Union Special, seamers and edgers; National and Lamb sewing machines; 30 years of age, single; good reference. 4153, Textile World Record, Boston, Mass.

Superintendent or Overseer of spring needle knitting; 25 years' experience on Crane, Campbell & Clute, Twise Drill Tompkins machines; familiar with all classes of goods, including astrakhans, stockinet and jersey cloth, elderdowns, fleece linings, rubber linings, men's flat underwear, etc.; good hustler; 40 years of age, married; good reference; will not go South or Canada. 4396, Textile World Record, Boston, Mass.

Overseer of Finishing or second hand; worked on nearly all grades of men's, women's and children's cotton hosiery; will not go to Mass., R. I., Conn., Me., N. H., Vt., N. Y., West or Canada; 20 years of age; good reference. 4437, Textile World Record, Boston, Mass.

Manager or Superintendent; worked on cotton mercerized and silk half hose, ladies' and children's hose; familiar with Acme, Victor, and Branson knitters; Wildman, Branson and Brinton ribbers; Hepworth and Beatty loopers; 25 years of age; good reference. 4499, Textile World Record, Boston, Mass.

Superintendent of a Hosiery Mill; has had a number of years of experience; also worked on woolen factories; 40 years of age; good reference.
4704, Textile World Record, Boston, Mass.

Cutting Machines

Every Textile Manufacturer has his own special problems. If these problems relate to cutting cloth, paper, felt, &c., in any way, shape or form we are always glad to volunteer our help in solving them.

61 Poplar Street
Brooklyn, N. Y.

Cameron Machine Co.

Special Textile
Machine Designers

WOOLEN CARDERS.

Overseer of Woolen Carding; worked on wool, shoddy and cotton and wool mixes; cow hair, cotton waste and asbestos; worked on all English cards including waste cards, D. & F., Lombard, American and German cards; 28 years of age; good reference.
4751, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; worked on blankets, dress goods, suitings, overcoatings, extracts and shoddy makings; familiar with all American makes of machinery; will not go South; 28 years of age, married; good reference.
4743, Textile World Record, Boston, Mass.

Overseer of Woolen Carding and spinning; worked on cotton and wool shoddy, especially cotton waste; familiar with Asa Lee, Lathan and Dobson & Barlow machines; 28 years of age, married; good reference.
4768, Textile World Record, Boston, Mass.

Overseer of Carding; worked on all sizes of yarn, from 3/4 to 8 run, woolen, cotton and shoddy mixes, in fact all kinds of yarn; familiar with all makes of American cards, with the exception of the Boulette condenser; will not go to N. Y., N. J., West, South or Canada; 34 years of age, married; good reference. 4291, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Worked on goods made from wool shoddy and cotton mixes on D. & F., Lombard, Cleveland, Smith cards; prefer New England states, good reference, 50 years of age, married. 4695 Textile World Record, Boston, Mass.

Second Hand of carding; worked on meltons, kerseys, venetians, broad cloths, ladies' dress goods, men's suitings, cotton, wool and shoddy mixes; familiar with D. & F., Lombard, Cleveland, and all kinds of American makes of carding machinery; will not go to Me., Pa., N. Y., N. J., West, South or Canada; good reference; 38 years of age, married. 4251, Textile World Record, Boston, Mass.

COTTON CARDERS.

Second Hand of Carding; worked on sheetings, umbrella cloth, etc.; familiar with various makes of machinery; will not go to Me., N. H., Vt., Pa., N. Y., N. J., West, South or Canada; 50 years of age. 4495, Textile World Record, Boston, Mass.

Overseer of Carding or superintendent; worked on yarns from 16s to 120s counts, carded and combed, white and colored for weaving hosiery and lace goods; familiar with all makes of machinery; 31 years of age, married; good reference. 4418, Textile World Record, Boston, Mass.

Overseer of Cotton Carding or superintendent of a small mill; worked on all classes of plain cotton goods; familiar with the Whitin, Providence, old and new Mason, Lowell, Howard & Bullough makes of machinery; will not go to Vt., Pa., N. Y., N. J., West, South or Canada; 36 years of age, married, American; good reference. 4340, Textile World Record, Boston, Mass.

Overseer of Carding; worked on hosiery and thread yarns from 8s to 17s; familiar with all makes of American and English machinery; has a drawing-in hand and two speeder tenders in the family; 40 years of age, married; good reference. 4326, Textile World Record, Boston, Mass.

Overseer of Carding, picking or combing; worked on prints, fine hosiery yarns, has made rovings for yarn from Nos. 3 to 85; familiar with all makes of carding and combing machinery; will not go to Pa., N. J., West, South or Canada; 33 years of age, married; good reference. 4289, Textile World Record, Boston, Mass.

Overseer of Cotton Carding or Second Hand. Worked on fine and coarse work, combed and carded, understands all American and English makes of cards, 34 years of age, married. 4116 Textile World Record, Boston, Mass.

DYERS.

Overseer of Woolen Dyeing, or second hand; worked on raw stock, worsted yarns, knitting yarns, dress goods, overcoatings, broad cloths, unions and raw cotton; familiar with Rodney, Hunt, Klauder & Weldon makes of machines; will not go West, South or Canada; 28 years of age; good reference.
4758, Textile World Record, Boston, Mass.

Overseer of Woolen Dyeing; worked on cotton and worsted yarns, wool and cotton raw stock, wool, cotton and union hosiery, ladies' dress goods, eiderdowns, bleaching cotton, wool and mixed goods; familiar with all kinds of machinery; 26 years of age; good reference.
4762, Textile World Record, Boston, Mass.

Overseer of Cotton Dyeing; worked on dress sateens, linings, raw stock, yarns, warps, long and short chain, mercerizing, bleaching yarn and raw stock, sulphur black and developed black, also Bedford cords; familiar with all kinds of machinery; will not go to Canada; 45 years of age, married; good reference.
4752, Textile World Record, Boston, Mass.

Overseer of Woolen Dyeing; worked on piece dyes, unions, raw stock, cotton and wool yarns; will not go West, South or Canada; 29 years of age; good reference.
4739, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on worsted skein yarn, wool, shoddy and piece dyes, men's and ladies' wear, some cotton skein blacks, and silk noils; familiar with the Klauder & Weldon skein dyers; will not go West, South or Canada; 41 years of age, married; good reference.
4738, Textile World Record, Boston, Mass.

Overseer of Woolen Dyeing; worked on worsted yarn and piece dyes; will not go to Pennsylvania, New Jersey, West, South or Canada; 30 years of age, married; good reference.
4740, Textile World Record, Boston, Mass.

Overseer of Woolen Dyeing; worked on raw stock, piece yarn, slubbing and cotton; familiar with the Klauder-Weldon and all kinds of wool dyeing machines, revolving and circulating; 42 years of age, married; good reference.
4737, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on worsteds, chromate and chrome top colors, broadcloths, dress goods, kerseys, meltons, thibets, worsted and cotton yarn; understands the latest methods of dyeing in alizarine acid colors, union dyeing and chromatic; familiar with all kinds of machinery; will go anywhere for a good position; 33 years of age; good reference. 4228, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on all kinds of woolen goods, both in piece, yarn and raw stock; will not go West, South or Canada; 38 years of age, married; good reference. 4257, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on wool, shoddy, cotton yarn, silk and silk noils, also piece; 43 years of age, married; good reference. 4293, Textile World Record, Boston, Mass.

Second Hand of Dyeing; worked on underwear, hosiery yarns, cotton, worsted and piece goods; wishes to get in with a good dyer on men's wear, piece goods or dress goods as second hand; will not go West, South or Canada; 24 years of age. 4397, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on raw wool, cotton yarns, piece dyes, both all wool and unions; understands carbonizing, both wet and dry process; familiar with all makes of machinery; will not go to Penn., West, South, or Canada; 27 years of age; good reference. 4403, Textile World Record, Boston, Mass.

BLEACHERS AND DYERS.

Overseer of Bleaching on jute and linen yarn; 47 years of age, married; good reference. 4732, Textile World Record, Boston, Mass.

Wanted; superintendency of bleaching, dyeing and finishing by a thoroughly practical man; Englishman, 28 years of experience on all kinds of cotton piece goods, laces, embroideries, especially lawns, also knit goods, yarns, organdies, etc.; can guarantee satisfaction; furnish A1 references and willing to go anywhere. 4453, Textile World Record, Boston, Mass.

MASTER MECHANICS.

Mechanical Superintendent, master mechanic or chief engineer; familiar with all makes of machinery; will not go to West, South or Canada; 38 years of age, married; good reference. 4706, Textile World Record, Boston, Mass.

Master Mechanic; familiar with all kinds of machinery; 37 years of age, married; good reference. 4332, Textile World Record, Boston, Mass.

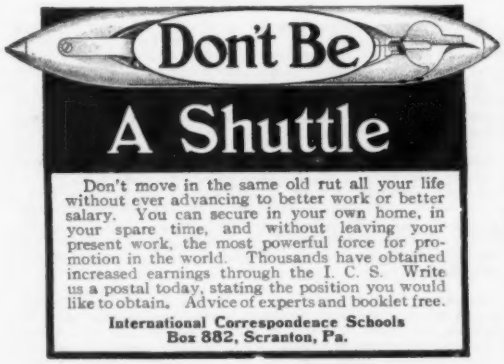
Master Mechanic or Millwright; worked on all kinds of machinery used in woolen, worsted or cotton mills; will not go to Penn., N. Y., N. J., West, South or Canada; 35 years of age, married; good reference. 4402, Textile World Record, Boston, Mass.

Master Mechanic; worked on all kinds of textile and paper machinery; understands all makes of engines and electrical machinery; will go anywhere for a good position; 42 years of age, married; good reference. 4305, Textile World Record, Boston, Mass.

Mill Machinist or boss fuller; worked on dress goods, kerseys, meltons, thibets, suitings, overcoatings and flannels; familiar with all kinds of machinery; will not go to Pa., Me. or Canada; 26 years of age; good reference. 4439, Textile World Record, Boston, Mass.

Machinist and Repair Man; worked on everything made on Leighton round machines; can do any kind of repairing, but wants Leighton machines only; will not go to Me., N. H. or Vt., New York City, Brooklyn, or Jersey City; 38 years of age, single; good reference. 4266, Textile World Record, Boston, Mass.

Mechanical and Mill Engineer open for engagement; wishing to locate with a growing concern desiring the services of an engineer of construction and mechanical works, or master mechanic; at present employed in similar position; desires advancement. 4324, Textile World Record, Boston, Mass.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WOOLEN DRESSERS.

Overseer of Woolen Dressing, assistant designer or overseer of weaving; worked on worsteds, woolens, men's wear and dress goods; familiar with the Crompton & Knowles looms, and all kinds of dressing, both wet and dry; will not go South or Canada; 30 years of age, married; good reference. 4749, Textile World Record, Boston, Mass.

Overseer of Dressing, spooling, winding or twisting; worked on dress goods, resist dyes, fancy worsteds, fancy cottons, woolen suitings and overcoatings; familiar with almost all kinds of dressing, spooling, twisting and winding machinery; will not go to Pa., West, South or Canada; 30 years of age, married; good reference. 4364, Textile World Record, Boston, Mass.

Overseer of Woolen Dressing; worked on woolens and worsteds; familiar with all kinds of machinery; will not go to Penn., N. Y., N. J., West, South or Canada; 40 years of age, married; good reference. 4410, Textile World Record, Boston, Mass.

COTTON DRESSERS.

Overseer of Dressing, spooling, slashing or twisting; worked on fancy worsteds, dress goods and piece dyes; familiar with all kinds of machinery on the market; will not go West, South, or Canada; 45 years of age, married; good reference. 4381, Textile World Record, Boston, Mass.

Overseer of Warping and spooling in a worsted or woolen mill; worked on fancy worsteds, men's wear, dress goods, woolen cassimeres, beavers, doeskin, broad cloths and fancy dress goods; familiar with various makes of warping and spooling machinery; 48 years of age, married; good reference. 4147, Textile World Record, Boston, Mass.

WORSTED MILL OVERSEERS.

Worsted Drawing Manager or section hand; worked on mohair, English wools and cross breds; familiar with Prince, Smith, Hall & Stells, and Smith Royde Works; 43 years of age, married; good reference.
4756, Textile World Record, Boston, Mass.

Second Hand of spinning or twisting; worked on mohair, crossbred, alpaca and botany; familiar with the Prince, Smith & Sons, Hall & Stells, Lowell Machine Shop and Fales & Jenks makes of machinery; will not go to Pa., West or South; 29 years of age, married; good reference. 4301, Textile World Record, Boston, Mass.

Superintendent or overseer of drawing, spinning or twisting; worked on all kinds of stock from 1 to 80s, mohair and alpaca; familiar with Prince, Smith & Son, Taylor, Wardsworth, Collins Bro., Platts, Lowell Machine Shop, Hall & Stell and Farrar makes of machinery; will not go West; 49 years of age, married; good reference. 4334, Textile World Record, Boston, Mass.

Superintendent or assistant superintendent of a worsted yarn mill; familiar with Prince, Smith, Lowell Machine Co., Davis & Furber cards; Draper and Whitin looms; familiar with dress goods; 26 years of age, American; good reference. 4345, Textile World Record, Boston, Mass.

Overseer of Drawing, spinning, twisting, or superintendent; worked on fancy mixes, and white yarns from 9 3/4 to 50 3/4; familiar with the Lowell, Prince & Smith, Collins, Boyd, French spinning system; will not go to Me., N. H., Vt., South or Canada; 30 years of age, married; good reference. 4429, Textile World Record, Boston, Mass.

Overseer of Worsted Carding and combing; worked on all classes of goods; familiar with both English and American makes of machinery; 29 years of age; good reference. 4398, Textile World Record, Boston, Mass.

WOOLEN SPINNERS.

Overseer of Woolen Spinning, twisting or spooling; worked on wool, shoddy, cotton and mixtures; familiar with D. & F., Johnson & Bassett and Bancroft mules; will not go South or Canada; 40 years of age, married; good reference.
4753, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; worked on wool, cotton, shoddy from the lowest stock to the best of wool; understands twisters and spoolers of all makes; familiar with the J. & B., D. & F., Smith Brothers, Bancroft, in fact any mule that is made; will not go to Vt., N. J.,, or Canada; 35 years of age, married; good reference. 4489, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning, or charge of spoolers, twisters, etc.; worked on wool, cotton, shoddy, cotton waste, and other waste from 1/2 to 14 run first and second spinning; 2s to 10s in cotton waste; familiar with various makes of machinery; will not go to Me., N. H., Vt., or Canada; 32 years of age, married; good reference. 4493, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning, spooling, winding and twisting; worked on all classes of wool, cotton and shoddy mixes and all kinds of double and twists; understands the D. & F., J. & B., Furbush, Paul or Woonsocket machines; will not go to Pa., N. J., West, South or Canada; 39 years of age, married; good reference. 4498, Textile World Record, Boston, Mass.

Overseer of Spinning; worked on all kinds of woolens; familiar with the Davis & Furber machines; will not go to Pa. or Canada; 46 years of age, married; good reference. 4466, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; worked on all kinds of woolen goods, fine and coarse yarns, from 5/8 to 10 and 11 run, also second spinning, all kinds of double of twist, and wool, cotton and shoddy mixes; familiar with Davis & Furber mules; will not go to Pa., N. Y., N. J., West, South or Canada; 33 years of age, married; good reference. 4435, Textile World Record, Boston, Mass.

COTTON SPINNERS.

Overseer of Cotton ring spinning or spooling department; worked on all classes of coarse and fine counts, carded and combed; familiar with all makes of machinery; will not go to Pennsylvania, New Jersey, New York, West or South; 46 years of age, married; good reference.
4769, Textile World Record, Boston, Mass.

Overseer of Spinning, spooling, warping, ring or mule spinning or second hand; worked on sheetings, shirtings, cottonades, denims, and fancies; familiar with all kinds of spinning frames, spoolers and warpers; will not go to N. H., N. Y., or N. J.; 47 years of age, married; good reference. 3910, Textile World Record, Boston, Mass.

Overseer or Second Hand of spinning room; worked on yarns from 3s to 90s; familiar with Platt Brothers, Hopedale, Brooks, spoolers and warpers; will not go West or South; 38 years of age, married; good reference. 4473, Textile World Record, Boston, Mass.

Overseer of Spinning, winding, warping, quilling and spooling; worked on warp and filling yarn for fine dress goods, also hosiery yarn; familiar with the Lowell, Whitin, Mason, Universal, Camless, long chain, Draper, and Lowell spoolers; 30 years of age; good reference. 4483, Textile World Record, Boston, Mass.

Overseer of Spinning, spooling, warping, twisting and quilling; has worked on blankets, dress goods, shirtings, linen and cotton towelings; made all kinds of yarn, both warp and filling, all counts; familiar with Whitin, Mason, Fales & Jenks and Howard & Bullough makes of machines; 34 years of age, married; good reference. 4440, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Woolen Weaving; worked on all kinds of woolen, worsted and cotton goods; familiar with Crompton & Knowles and Crompton & Thayer looms; will not go West, South or Canada; 44 years of age, married; good reference.
4736, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving. Worked on woolen dress goods, men's wear, worsted suitings, overcoatings, on Crompton & Knowles looms; 34 years of age, married, good reference. 4100 Textile World Record, Boston, Mass.

Boss Weaver or Designer, or superintendent of a small mill; worked on all kinds of ladies', men's and boy's suitings; familiar with the Crompton & Knowles and Crompton & Thayer looms; will not go to Penn., West, South or Canada; 53 years of age, married; good reference. 4395, Textile World Record, Boston, Mass.

Overseer of Weaving, or would accept good fixing or second hand job; worked on worsteds, fancy woolens, cotton worsteds, piece dyes, ladies' dress goods, cassimeres, men's suitings, thibets, blankets and flannels; familiar with Crompton, Knowles, Thayer & Crompton looms; will not go to Pa. or Canada; 38 years of age, married; good reference. 4323, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on woolens and worsteds; familiar with Crompton, Knowles and English looms; will not go West or South; 46 years of age, married; good reference. 4331, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on woolen and worsted goods of all kinds; familiar with Knowles, Crompton and Thayer looms; will not go to Pa., N. Y., N. J., West, South or Canada; 28 years of age, single; good reference. 4287, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on wool and cotton blankets; prefers the asbestos business; familiar with the Crompton & Knowles looms; 40 years of age, married; good reference. 4276, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of cotton weaving; worked on plain and fancy goods; familiar with the Whitin, Mason, Colvin, Draper, Kilburn and Lincoln looms; will not go to Pa., West or Canada; 42 years of age, married; good reference. 4304, Textile World Record, Boston, Mass.

Overseer of Weaving or second hand; worked on plain and fancy cotton goods and blankets; familiar with Northrop, Dropbox, dobby, spooling, warping and blanket finishing machines; 28 years of age, single; good reference, German. 4337, Textile World Record, Boston, Mass.

Overseer of Weaving in a small mill or a good second hand position; worked on twills, dobbies, pillow tubing, brocades, quilts, towels, shirtings and plain suitings; familiar with the Crompton, Knowles, Lewiston, Lowell, Mason, Whitin, Colvin and Draper machines; 29 years of age, married; good reference. 4262, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on sheetings, denims, drillings, shirtings, table cloths, and a variety of cloth in ladies' dress goods in cotton, worsted, wool and silk; familiar with all makes of machinery; will not go to Pennsylvania, New Jersey, West, South or Canada; 31 years of age, married; good reference. 4209, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on lenos, fancies of all kinds, ducks, denims, awnings, ticks, sheetings and prints; familiar with Crompton, Knowles, Whitin, Draper, Lowell and Mason machines; 38 years of age, married; good reference. 4445, Textile World Record, Boston, Mass.

WOOLEN FINISHERS.

Overseer of Woolen Finishing; worked on woolens and worsteds, wool filled, resist; also thoroughly understands carbonizing; familiar with Hunter washers, Hopkins mills, Parker & Wilson shears, Gessner, Woonsocket and Voelkens presses; will not go West, South or Canada; 48 years of age, married; good reference.
4754, Textile World Record, Boston, Mass.

Overseer of Woolen Finishing; worked on worsteds and woolens; familiar with all makes of finishing machinery; good reference.
4759, Textile World Record, Boston, Mass.

COTTON FINISHERS.

Overseer of Cotton Napping, or second hand; worked on blankets, domets, shoe linings and all grades of Canton flannels; familiar with French napping machines, Davis & Furber finishers and Canton flannel nappers; will not go to Pennsylvania, West, South or Canada; 34 years of age; good reference.
4761, Textile World Record, Boston, Mass.

Superintendent of cotton finishing; worked on all classes of cotton goods, prints and wool shoddies; familiar with all makes of finishing machinery; will not go South or Canada; 47 years of age, married; good reference.
4760, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Mill Agent, manager or superintendent of a woolen or worsted mill; worked on cassimeres, cheviots, meltons, broad cloths, thibets, kerseys, homespuns, men's and women's wear, piece dyes, serges, fancies, etc.; familiar with American and English makes of machinery; will not go to New Hampshire, Vermont, New Jersey, South or Canada; 41 years of age, widower; good reference.
4755, Textile World Record, Boston, Mass.

Electrician; worked on A and D C high and low potentials; general construction work and maintenance of plants; familiar with various makes of machinery; will not go West, South or Canada; 27 years of age, married; good reference.
4741, Textile World Record, Boston, Mass.

Overseer of Folding and Packing; worked on fine and fancy goods; 36 years of age, married; good reference. 4274, Textile World Record, Boston, Mass.

Overseer of Burling and mending or cloth examiner in a clothing house; worked on all classes of fine and coarse woolens and worsteds; 42 years of age, married; good reference. 4448, Textile World Record, Boston, Mass.

Bookkeeper, office manager or paymaster by a married man 29 years of age; has had over ten years' experience; all the late methods; also banking experience; first class references. 4715, Textile World Record, Boston, Mass.

Loom Fixer; worked on all classes of woolen goods; familiar with Crompton & Knowles looms, but would prefer Knowles looms; will not go to N. H., Vt., Pa., N. Y., N. J., West, South or Canada; 48 years of age, married; good reference. 4497, Textile World Record, Boston, Mass.

Loom Fixer; worked on worsteds; familiar with Crompton & Knowles looms; will not go to Me., N. H., Vt., Penn., West, South or Canada; 35 years of age, married; good reference. 4432, Textile World Record, Boston, Mass.

Boss Comber; worked on Egyptian, American and Sea Island cotton; familiar with Whitin, 6 or 8 heads, Dobson & Barlow, single and double nip, Nasmith combers, also German makes of combers; wishes to go South; 24 years of age; good reference. 4428, Textile World Record, Boston, Mass.

A NEW COMBINATION

Jacobs' "Verybest" Lug Strap combined with Jacobs' Pick Arm Strap.
For "Northrop" and "C. & K." Looms.
Free samples for trial to anyone.
Made from Army duck and long staple Egyptian and Sea Island Cotton duck.
Sold by leading supply houses.

E. H. JACOBS MFG. CO.,
Danielson, Conn.

MEN WANTED.

Representatives and Brokers
WANTED

By New York Importing House of Wool and Goats Hair. Address "Wool," Textile World Record, 123 Liberty St., N. Y.

Traveler Wanted

An important **Aniline Color House** in New York wants an accomplished Traveler for Canada. Apply to B No. 1, Textile World Record, Boston, Mass.

Textile Machinery Firm

Wants thoroughly compeient gentleman of good address and experience in this line to take charge of department. Knowledge of German desired. State full particulars and salary. "Opportunity," Textile World Record, Boston, Mass.

Wanted:—Two Young Men

Of character and ability to make good. One thoroughly experienced in use of Grosser Hand and Power Knitting Machines, and capable of taking charge of our knit slipper department. One experienced in selling goods to the Wholsale Jobbing and Department Store Trade and with ability to manage the sales end of a business either in the office or on the road. Address "W. I. J," care Textile World Record, Boston, Mass.

It Sometimes Happens

that Wyandotte Textile Soda facts are confused with general alkali statements.

Every mill man who fails to make this distinction is depriving himself of a profit in no small amount. You ask yourself how is it? Just because Wyandotte Textile Soda is able to show results in the quality and finish of your output that no other alkali can possibly produce.

It is only reasonable that Wyandotte Textile Soda should do the unusual. It is not a general chemical but a special article made for specific uses.

A man is a man, but you would not consider employing a tanner as your chief wool scourer, nor an engineer as the superintendent of your dye house. Neither is it fair to suppose Wyandotte Textile Soda no different from other sodas merely because it is a member of the soda family.

None Genuine except with a card bearing this Trade Mark

In every package.

We only ask for

Wyandotte Textile Soda

a fair trial. The fact that it does possess special properties that make it of unusual value in wool and cloth scouring and fulling, soap building, acid neutralising, and in setting and brightening of colors will be easily proved to your entire satisfaction.

Order from your supply house.

The J. B. FORD CO., Sole Mnfrs.

Wyandotte, Mich., U. S. A.

This Soda has been awarded the highest prize wherever exhibited.

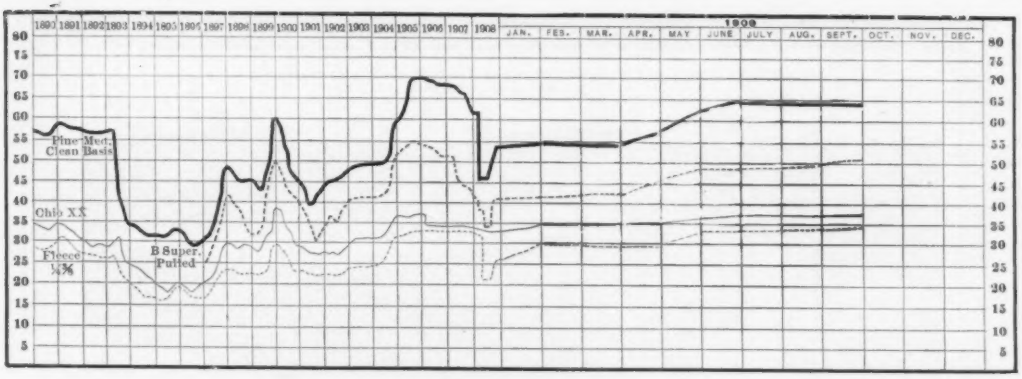


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

With foreign prices for wool up from 5 to 10 per cent., the domestic market has hardened and buyers are paying the full quotations without much objection. One feature of the situation deserving special attention is the growing scarcity of light shrinking foreign wool suited for export to the United States. With the demand from this side growing stronger this forces American buyers to take wool of heavier shrinkage, and, consequently, subject to a higher rate of duty. In other words the increase in the demand for foreign wool automatically increases the tariff on it. Prices have not advanced on this side since our last report, but it is a seller's market and likely to remain so indefinitely.

*Tennessee, Memphis. There is nothing definite as yet in the matter of the Enfield Hosiery Mills organizing a company to start a branch mill in Memphis. The matter is being considered by local investors.

Pennsylvania, Philadelphia. E. J. Aucott, occupying two floors in the building at 4947 Wakefield St., Germantown, reports that he has enough business on hand to keep him running night and day until June next. He has increased the number of his knitters to 100 and is also operating 2 welters, 4 loopers and 5 sewing machines on men's and women's seamless cotton hosiery, which he sells direct. Mr. Aucott also states that after January next he will take over the remaining floor in the building, when further additions will be made to the plant. He is also buying hosiery in the grey and wishes any manufacturer selling his goods in that condition to communicate with him.

*Tennessee, Nashville. The Nashville Hosiery Mills, which have taken over the plant at this place formerly operated by the National Hosiery & Yarn Co., have organized with J. H. McPhail, president, superintendent and buyer, and J. H. Thomas, treasurer. They are manufacturing ribbed cotton hose for children on 300 knitting machines. As noted, the National Hosiery & Yarn Co. has been dissolved.

INVESTIGATE THE ONE DYEING MACHINE THAT DOES PERFECT WORK

The Delahunty

Circulating type of machine for Bleaching Rawstock, Yarns and Warps, Dyeing the Vat Colors, Sulphurs, Indanthrines, Ciba, and Algol Dyes will prove to you, as it has proven to others, that it is the only machine that does perfect work.

DELAHUNTY DYEING MACHINE CO.

General Office, Pittston, Pa. **Southern Agents, Alexander and Garsed.**

Massachusetts Mills, Lowell, Mass., 300,000 square feet of roofs laid along the lines of the Barrett Specification

Barrett Specification Roofs

Sixty Years' Experience Behind Them

THE principles of Barrett Specification Roofs are over 60 years old.

There is nothing new or experimental about them.

The architect, engineer or owner who will instruct his roofing contractor to cover his buildings with such roofs can make no mistake.

Without being impractical in any of its provisions, the Barrett Specification covers with absolute precision every detail of constructing a roof of coal tar pitch, tarred felt and slag or gravel.

First.—It provides for the proper amount and weight of felt.

Second.—It provides for the proper amount and distribution of the coal tar pitch.

Third.—It minimizes the possibility of poor workmanship.

Fourth.—It insures a roof that is unapproachable for durability and low cost.

To day we believe there are few architects or engineers who have not some familiarity with this Specification.

Requests for it have come to us from all over the country, and the simple phrase "The roof shall be laid according to The Barrett Specification" is now frequently incorporated into architects' original specifications.

Anyone can now buy such a roof and know accurately what he is getting if he will insist that his roofing contractor follow the Barrett Specification absolutely.

Copy of this Specification will be sent to any address on request.

BARRETT MANUFACTURING COMPANY

New York Philadelphia Chicago Boston Cleveland Pittsburg Cincinnati
Kansas City Minneapolis New Orleans St. Louis London, Eng.

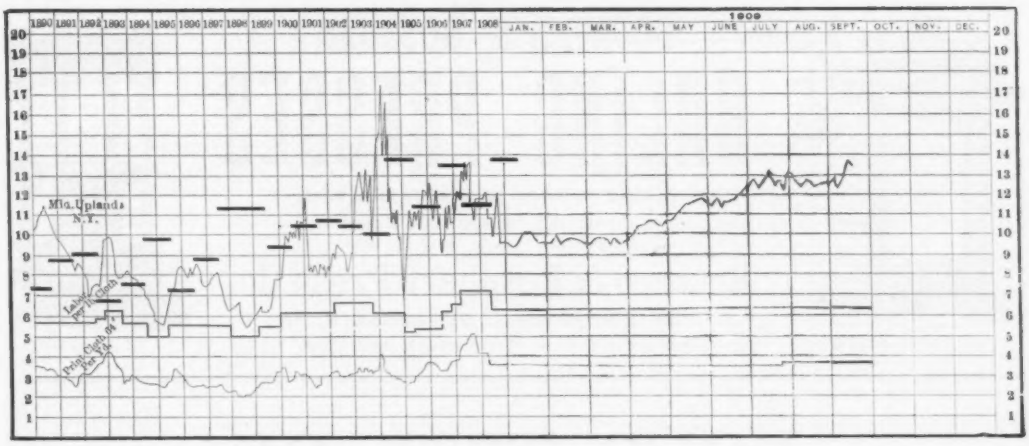


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

The Cotton Market.

The cotton market is controlled by a combination of natural and speculative conditions. It is reasonably certain that the present crop is to be a small one, that is measured by the crops with which the trade has become familiar since 1904; and it is equally certain that the demand for cotton goods calls for a quantity of raw cotton far in excess of this year's supply. Added to these factors is the speculative element in the trade which has found a leader and which will be reinforced by the public if success follows the initial efforts to put up prices. European mills are on short time and American mills will adopt the same course if the goods market fails to advance with the price of raw cotton.

The movement into sight from Sept. 1 to 24 is estimated by the "Chronicle" for a series of years as follows:

1909, Sept. 24	.....	1,005,956 bales.
1908, Sept. 26	.....	934,919 bales.
1907, Sept. 27	.....	768,892 bales.
1906, Sept. 28	.....	956,705 bales.
1905, Sept. 29	.....	1,246,910 bales.
1904, Sept. 30	.....	1,373,847 bales.

The world's visible stock on Sept. 24 is estimated by the same authority at 2,190,020 bales, as compared with 1,997,589 bales on same date in 1908, 2,318,254 bales in 1907, and 1,970,746 bales in 1906.

Pennsylvania, Collegeville. A hosiery mill will probably be located here in the course of a month by J. Abner Barndt, a local contractor and builder.

Pennsylvania, Philadelphia. The Arion Knitting Co. has been reported incorporated with capital stock of $15,000.

Pennsylvania, Philadelphia. On Sept. 17 application will be made for a charter for the E. G. ChesterHosiery Co., a new corporation which will take over the business of the same name at Cedar and Huntingdon Sts. There will be no change in the plant.

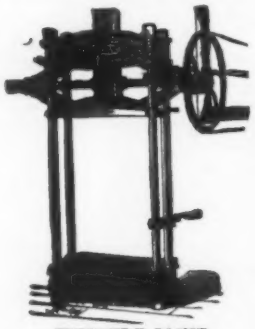
Pennsylvania, Philadelphia. A charter has been asked for Chesterman & Streeter, incorporated, with Edwin Chesterman, Frank E. Chesterman, John H. Chesterman and Dana L. Chesterman as incorporators. The company, which is manufacturing surgical elastic hosiery of cotton and silk, is located at 25 South 11th St.

*Virginia, Chase City. At a meeting held recently for the purpose of considering the proposition made by Walker & Bro. of Wilson, N. C., to establish a knitting mill here, it was decided to offer exemption from taxation for five years and to subscribe liberally to the stock of the new concern.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



KNUCKLE JOINT.

BOOMER & BOSCHERT

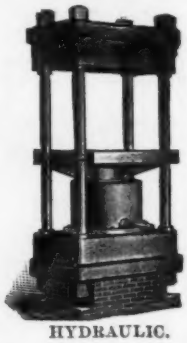
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



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YOUR TEST OF

this Loom Harness is what we want. We make a specialty of cabled twine loom harnesses. We have been making these harnesses for many years. We have tested them under all sorts of conditions, and believe that for ordinary weaving, harnesses made of cabled twine wear longer and weave better than than those made of ordinary 4 ply twine. We do not recommend cabled twine for all harnesses, but where it is suitable for the work we strongly advise its use.

G TRADE MARK

Garland Mfg. Co., Saco, Maine

Formerly Loom Picker Co., Biddeford, Maine

A Crosby Indicator

In the Hands of a Competent Man Will Increase the efficiency of Your Plant and Cut Down Your Coal Bill. Faultless in Design. Perfect in Workmanship.

Write for Catalogue.

TRADE MARK CROSBY

Pop Safety Valves
Pressure and Vacuum Gages
Water Relief Valves
Blow-off Valves
Rubber Pump Valves

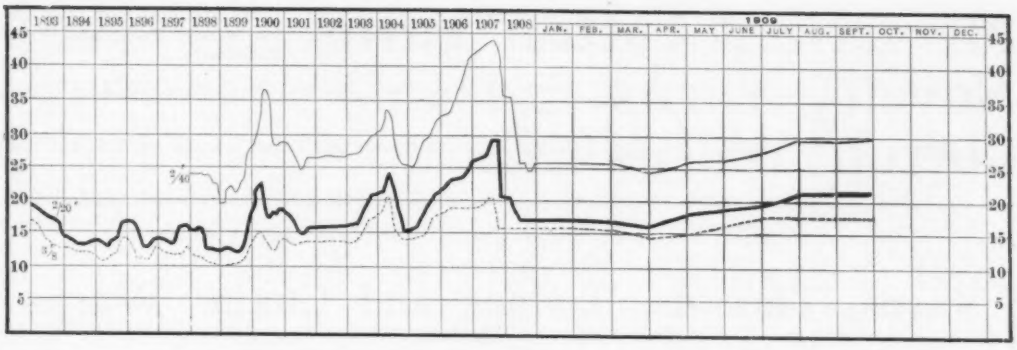
Recording Gages
Single Bell Chime Whistles
Feed Water Regulators
Lubricators – Oil Cups
Gage Glass, Water Gages, Etc.

CROSBY STEAM GAGE AND VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

The cotton market has been excited the past few weeks and this has had the effect of depressing the yarn business. Spinners have been unable to consider prices that buyers were willing to pay and manufacturers as a rule have been unable to sell their product at a price that would enable them to pay present prices on yarn. Early in the month there was a decided softening in the price of yarn which has, however, been checked by the advance in cotton. The advance in cotton is largely speculative coming as it has at the beginning of a new season. We quote as follows:

Eastern Cops.

6s	21
8s	21¼
10s	21¾
14s	22¾
16s	23¼
18s	23¾
20s	24¼
22s	24¾
24s	25¼
26s	25¾
30s	26½
34s	27½
36s	28½
40s	29½

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	23
14s	23½
18s	24
20s	25
24s	26
26s	27
30s	28
36s	31
40s	33
45s	37
50s	41
55s	45
60s	49

Eastern Two-Ply Warps, Carded Peeler.

2/30s	28
2/36s	31
2/40s	33
2/45s	37
2/50s	41
2/60s	49

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	41
36s	43
40s	44
45s	47
50s	51
55s	54
60s	53
70s	64

The Philadelphia Market.

7s and coarser	19½
8s and 9s	20½
10s	21
12s	21½
14s	22
16s	22½
18s	23
20s	23½
22s	24
24s	24½

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

Greene & Daniels Manufacturing Co.,

Combed, Carded and Gassed

Yarns, Threads, Twines and Chain Warps

Dye Sulphur Blacks Direct in Cops, Cones or Tubes.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. **4s to 60s.**

A. G. THURSTON & SON,

MANUFACTURERS OF

Fluted Rolls, Pressers for Flyers

AND GENERAL MACHINERY

Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls. Flyers Repaired and Fitted with any desired style of Pressers, Spindles Straightened, Restepped and Retopped.

Box 528. FALL RIVER, MASS.

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

ELIAS T. VANDEGRIFT

Successor to Ward & Vandegrift

In the Manufacturing of **SPINDLES,**

For Cotton, Woolen, Worsted, Silk and Flax Machinery. Manufacturers and Repairers. Also Flyers, Steel Caps, Bolsters, Steps, Tubes, Etc.

ELMER, SALEM CO., .. N. J.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

ESTABLISHED 1885

John Eppler's Machine Works, 629 Filbert St., Phila., Penna.

Manufacturers of

Latest Improved Cop Machinery

of all kinds and

Upright Knitting Machinery for Millinery

Dress and Upholstery Trimmings

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. **WARPS**

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

26s	25
30s	26
40s	31
50s	38

Southern high grade mule yarn:—

Cones.

10s	22
12s	22½
14s	23
16s	23¾
18s	24¼
20s and 22s	24¾-25½
24s	25¾

Southern frame yarn, lower grades:—

6s and 8s	19
10s	20

Eastern cones (high grade quality):—

10s	23
12s	23½
14s	24
16s	24¾
18s	25½
20s and 22s	25¾-26¼

Skein yarn (mostly Southern):—

4s and 8s soft	19
10s and 12s	20
14s to 20s	20½-21
22s	22
10/2	20
16/2	21
20/2	22½
30/2	25
40/2	31
8/3	18½
7/6	19

*South Carolina, Troy. L. P. Mullinax, previously reported interested in establishing a knitting mill, is local manager for the Troy Oil Mill Co. He is getting information on the knitting industry with a view to establishing a small plant. Nothing definite will be known concerning this project before March or April, 1910.

Pennsylvania, Philadelphia. The Robert Meyer Co., manufacturers of split-sole hosiery, also dyers, bleachers and finishers for the trade, at 3839 North Fifth St., are dissolving partnership. Complete information cannot be given at this time.

Pennsylvania, Reading. William H. McGowan purchased his partner's interest in the Eclipse Knitting Co., and will retire from the underwear trade after disposing of the stock and equipment at private sale.

Lowell Crayons Meet the requirements of any cotton, woolen or worsted mill.

May we send samples? 15 colors and white.

Lowell Crayon Co., Original Manufacturers **Lowell, Mass.**

Trade Mark on every box.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS

Cotton Yarns

122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,

Cotton Yarns.

345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
128-130 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

A. D. Salkeld & Bro.

COMMISSION MERCHANTS

DEP'T FRED'K VIETOR & ACHELIS

Cotton and Worsted Yarns

366 Broadway cor. Franklin St., NEW YORK

Fred Sternberg & Co.

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MERCERIZED TURKEY RED GASSED } **COTTON YARNS.**

LUDWIG LITTAUER,

SUCCESSOR TO

MOELLER & LITTAUER, 109 Greene St., New York

SILK, WORSTED, WOOLEN **YARNS** COTTON AND MOHAIR

Polished Threads and Tinsel. Artificial or Wood Silk. Mercerized, Turkey Red, Fine Gassed Yarns.

SILK MILL, BOONVILLE, N. Y.

SAVOGRAN

Cleans Wool, Floors, Anything.

INDIA ALKALI WORKS, Boston.

The Bradley Stencil Machine

Makes stencils in half a minute, at reduced cost of 1-10 cent each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Also manufacturers of Oil Stencil Board. Write for prices and samples.

The Olympia Cotton Mills Co. has used **two carloads** of

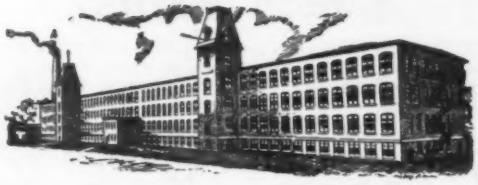
The STATESMAN 100% PURE PAINT

and Mill-light Gloss Enamel. *Samples furnished.*

Charles H. Brown Paint Co., 188-190 Montague St., Brooklyn, N.Y.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

Cotton Yarns

Jenckes Spinning Company
Pawtucket, R. I.

Carded and Combed single and twisted Yarns and Threads from Peeler, Sea Island and Egyptian Cottons, on Cops, Cones and Tubes or in Skeins and Warps. Six Cord Thread Yarns a Specialty **Bleached or in colors**

You Save Enough Insurance to Pay for the Equipment.

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

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77 Worth Street, New York, N. Y.
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Norwood Mfg. Co., Norwood, N. C.
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Manufacturers of
Hosiery Yarns
Nos. 10s to 30s Sell Direct
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Knitting and Weaving YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE,
226 CHESTNUT STREET,
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Authorized Capital **$100,000**
W. A. Dickel, Pres. and Treas.
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INDUSTRIAL MILLS CO.
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Manufacturers of
NARROW FABRICS
Special Attention Paid to Plain and Fancy
Spool Tapes and Stay Bindings.

F. W. MAURER & SONS CO.
MANUFACTURERS OF
Fringes, Tapes, Bindings, & Narrow Fabrics
Office and Factory: WAYNE AVE. and BRISTOL STS.
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KROUT & FITE MANUFACTURING CO.,
Manufacturers of
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY.
Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

*New York, Cohoes. The Root Mfg. Co. advises that they are not putting in any new machinery.

*New York, Cohoes. The Fitwell Knitting Company has not yet made any decision regarding reorganization.

New York, Ogdensburg. It is reported that L. N. Littauer, president of the Gloversville Knitting Co., has been in conference with the Board of Trade with the view of starting a glove factory in this town. It is also said that W. J. McIntosh, formerly connected with the glove factory at one time located here, is interested in the matter.

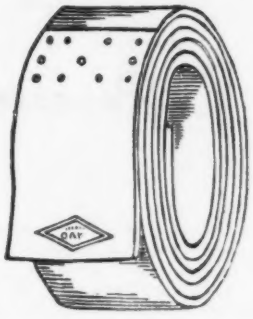
North Carolina, Whiteville. W. H. Crowell proposes to establish a knitting mill, and is interested in necessary machinery.

Ohio, Ada. A corporation has been organized with capital stock of $5,000 to operate the Wapak Knitting Co., which will be removed here from Wapakoneta, Ohio. Henry Young is president; Clyde Sharp, treasurer, and J. W. Morrow, secretary.

Pennsylvania, Bristol. The Bristol Hosiery Mills of which Chas. Weber is now the sole proprietor, are very busy, with plenty of orders on hand. The plant is being operated on 200 needle men's and women's seamless cotton hosiery with 60 knitters, 8 ribbers and 8 loopers. Mr. Weber proposes putting a line of infants' hosiery on the market within a short time. He sells direct.

*Pennsylvania, Easton. The Chipman Knitting Mills is the name of the new corporation to operate the knitting mills at this place. The firm of Charles Chipman's Sons will continue business with headquarters at 88 Leonard St., New York, and will represent the above mills. The Chipman Knitting Mills will not take over the control of the other mills mentioned in the last issue, as these plants will be handled by Chas. Chipman's Sons as heretofore.

Pennsylvania, Palmyra. The name of the Kreider Knitting Mills has been changed to the W. L. Kreider's Sons Mfg. Co.



There are two ways to effect sales. The easier way is to make cheap goods and sell them for "just as good" or "the best." The other way is to make goods which while high-priced give so much better service that they are cheaper in the long run.

The latter is our constant aim in making

Rhoads Leather Belting

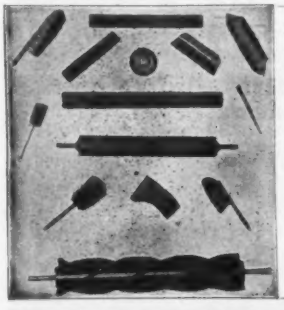
The service-giving quality results from care and skill in manufacture, and resource in adopting, adapting and inventing improved methods and machinery.

J. E. Rhoads & Sons

Philadelphia Chicago New York
Factory and Tannery, Wilmington, Del.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin St., NEW YORK

Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.
Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.



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Mill and Machine Brushes
Repairing a Specialty.
Worcester, Mass.

DUNCAN & YOUNGS
95 Worth Street, NEW YORK
Practical Manufacturers of
YARNS, THREADS, TWINES, CORDS, ROPE
AND MILL SUPPLIES
Anything in the line you cannot get anywhere else apply to us.

William B. Charles,
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Cotton Yarns, Cotton Cloth, Silesia, Sateens,
For the Underwear Trade.

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MANUFACTURER OF
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WEB, TAPE, BINDINGS, ETC.

THE BIAS NARROW FABRIC CO.
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65 Worth Street, New York
Bias and Straight Cut Fabrics and Ribbons.
Embossing and Cutting Customers Own Goods a Specialty.

Pocasset Worsted Company,

Worsted Yarns.

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100 BOYLSTON STREET
TELEPHONE 19 OXFORD

NEW YORK
46 EAST 17TH STREET
UNION SQUARE

H. Hodgson, Pres. & Treas. Fred Hodgson, Gen. Mgr.

QUEENSBURY MILLS

Mohair, Lustre and Worsted Yarns

—Single and Two Ply—

Grey—Colors on Mixtures Worcester, Mass.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

Testing of Yarns

Count—Twist—Strength—Moisture

When in doubt apply to

U. S. Silk Conditioning Company

472-474 Broome St., New York

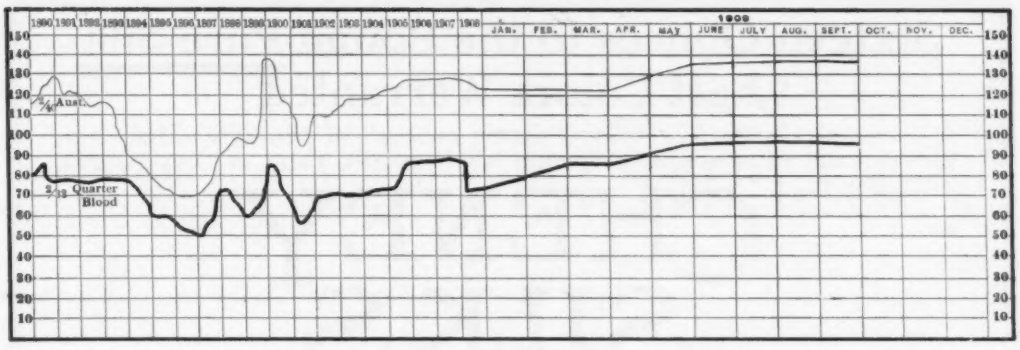
DYE STICKS

Made from high and selected grades of lumber to suit all the different machines, such as Klauder-Weldon, Hussong, Lorimer, etc. Plain or burnt finish as desired. Sticks for all sizes of Hand Kettles from natural water grown cedar.

Dry, Sulphur and Bleach House Poles, Wringing Sticks, etc. from selected lumber or natural cedar

Write for prices.

Frank Bailey, Manufacturer Drying Machines, Dry Poles, Wood Rolls, Trucks and Fans. Cedar Brook, N. J. Works at Braddock.



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

Woolen and Worsted Yarn Report.

Spinners report that they have about as much business booked as they can handle. The Bradford spinner is still delivering yarn under contracts placed some time ago, which have not run out far enough to effect the spinner in any way. The men's wear trade is now beginning to sample for the next heavy weight season and is asking for 2/12s to 2/24s 1/4 blood in the grey with a demand, also, for samples in black and white mixes in 25, 50 and 75 per cent. black. There is also a heavy demand from the knitting trade, which is asking for 2/26s with 16s and 20s in 2-ply and 2/18 in Oxford mixes. French spinners report that the counts asked for in their line are 40s, 50s and 60s in two-ply and single 20s, 24s, 30s, 35s and 40s in whites, some calling for mixes.

Owing to the advance at the London wool sales it is quite probable that both the Bradford and French spinners will have to advance their prices. They may not take the full 10 or 15 per cent. all at once, but as things point today it will not be long before they will have to ask for a full advance. At this writing the advance in Bradford yarns is not very marked, except that 2/16s ingrain yarns in black have gone up 2 cents per pound, in light grey 1 cent, in white 2 cents and 2/50 Delaine 1/2 cent, the last named now selling at $1.41 1/2 per pound. In French yarns 1/20s 1/4 blood has risen to 97 cents, an increase of 1 cent per pound. Single 30s half blood is now selling at $1.20, an increase of 2 1/2 cents.

The dress goods manufacturers, with the exception of a few of the larger mills, are doing practically nothing at the present time; in fact some of the mills are working on an average of only four days a week and even on this short schedule are not running all their looms. This is due to the fact that the cutter-up does not seem to know exactly what he is going to want, which makes it necessary for the weaver to buy from hand to mouth, whereas at this time of the year he should be rushing orders. The biggest seller just now is a cloth in which the manufacturer is placing a 2/32s Bradford spun yarn and single 24s, also Bradford spun. There is an indication that next season will see a return to serges and fine face goods. Inquiries are now being made to the French spinner for fine counts, but as the cloak and suit trade have not yet been educated up to the higher prices business is nearly at a standstill. There is no doubt that the manufacturers will have to pay the prices.

Woolen yarn spinners report that there is very little business being done, so far as the weaving trade is concerned. The orders coming in from this branch of the industry are small and of little consequence. The majority of the business in woolen yarns is coming from the knitting trade, which is placing orders in large quantities. The spinner of this class of yarn has as much business as he can handle and, in many instances, is turning over to commission spinners contracts which he cannot handle in his own plant. The knitters are asking for double bleached light grey mixes and some colors, mostly in 2/20s, with prices on Oxfords ranging from 56 to 75 cents, depending on the grade, and double bleached from 68 to 80 cents according to quality. There is also a demand for 2/25s double bleached and pink and light blue from the fancy knit goods trade. Prices on knitting yarns have advanced within the last month about 3 cents per pound on all numbers from 2/20s light grey mixes in 80 per cent. wool and 20 per cent. cotton at 56 cents, up to 2/25s bleached, all wool, which is now selling at 85

Sixteen Ounces to the Pound Pure Silk
Fast Colors Warranted

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are made in the Gray or Dyed; on Spools or Cones, Warped or in the Hank. Organzines, Trams and Singles—full weight—fast colors. Special Yarns made to order for all sorts of Silks or Silk Mixture Goods. Manufacturers' orders promptly executed. Also makers of

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ORGANZINE, TRAM & HOSIERY SILKS.
Fast Dye Organzines for Woolen Manufacturers a Specialty.
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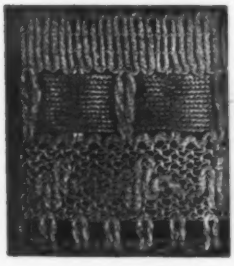

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BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 13 to 35s, white and colors on spools.
YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached Bleached and Colors for Manufacturers' use.
CROCHET LACE EDGINGS Latest Styles in Pant Laces.

229 Church Street 231 . . PHILADELPHIA

cents. In some quarters it is predicted that prices will again advance. There does not seem to be much demand for 2/20s colored all wool, with a consequence that the price has remained at 65 cents.

BRADFORD SPUN YARN.

2/16 Ingrain (black)	50
2/16 Ingrain (light grey)	51
2/16 Ingrain (white)	52
2/12 to 2/16 low common	65-67½
2/12 to 2/20 1/4 blood	84-86
2/20 to 2/24 1/4 blood	90
2/26 to 2/28 1/4 blood	95
2/32 1/4 blood	97½-1.02½
2/20 3/8 blood	1.00
2/26 3/8 blood	1.07
2/30 3/8 blood	1.08
2/36 3/8 blood	1.12½-1.15
2/40 1/2 blood	1.25
2/40 delaine	1/30-1.32
2/50 delaine	1.35½-1.41½
2/40 Australian	1.30
2/50 Australian	1.37½
2/60 Australian	1.50-1.52½
2/24 lustre	85
2/28 lustre	87½
2/30 and 3/32 lustre	85-87½
2/36 lustre	95-97½
1/24 worsted and 80s single cotton for raincloths	1.10
1/24 worsted and 120 single cotton for raincloths	1.25-1.27

FRENCH SPUN YARN.

1/20 1/4 blood	97
1/20 high 1/4	1.02½
1/20 high 3/8 blood	1.07½-1.10
1/20 1/2 blood	1.17½
1/20 3/8 blood	1.05
1/30 high 1/4 blood	1.02½-1.05
1/30 3/8 blood	1.07½-1.10
1/30 1/2 blood	1.20
1/40 1/2 blood	1.22½
1/50 delaine	1.30
1/40 Australian	1.42½
1/50 Australian	1.45
1/60 Australian	1.48
1/70 Australian	1.53½-1.55

WOOLEN YARN.

	Wool	Cotton	
2/20 Light Grey Mixed	80%	20%	56
2/20 Light Grey Mixed	90%	10%	57
2/20 Light Grey All Wool			60
2/20 Colored All Wool			65
2/20 Bleached	80%	20%	68
2/20 Bleached	90%	10%	72½
2/20 Bleached All Wool			75
2/25 Light Grey Mixed All Wool			80
2/25 Bleached All Wool			85

Missouri, St. Louis. The St. Louis Knitting Co. has been incorporated with capital stock of $2,000 to manufacture and deal in hosiery. The incorporators are Charles A. Schreiber, Felix Cornitius, and Wilbur H. Close.

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We have published a little booklet on

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which explains how other people are saving money by

Modern Methods

of buying and using

COAL

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NON-FLUID OILS
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"The oils which do not drip,"

Are used in hundreds of mills on roll-necks, in comb-boxes, on twister-rings, mule frames and looms—anywhere where the spattering of oil causes damage to yarn or fabrics.

Non-Fluid Oils are not greases—they are pure neutral mineral oils, but they are more vicious and more adhesive than liquid fluid oils. They are more lasting for two reasons—there is no loss from spattering and they have twice the lubricating durability of fluid oils.

One filling of a comb-box will demonstrate it.

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Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

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American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

The Rag and Shoddy Market.

Business has been quiet since our last report with slight changes in prices. Dealers are looking forward to the heavy weight season for an increase in the volume of business. The extremely high prices prevailing for wool are calculated to give strength to the market for wool substitutes, and the prediction is freely made that there will be an unusually large quantity of shoddy consumed during the coming year. Dealers are firm in their refusal to sell under quoted figures, and it is a very long time since there has been a more confident feeling in the trade than prevails at present. We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	46½-51
White knit, all wool, best fine	37-42
White knit, No. 2	33-38
Light yarn, extra fine	33-36
New pure indigo blue	**30-32½**

Merino.

Fine light, all wool	**28-31**
Medium light, all wool	17-20½
Fine black, all wool	**27-29**
Fine dark, all wool, best grade	20-23
Medium dark, all wool, No. 2	17-18
Red knit stock, strictly all wool	22-25
Red flannel, all wool	25-27
Dark blue for hosiery, strictly all wool, No. 1	**21-25**
Dark blue for hosiery, not all wool, No. 2	**17-20**

WOOLEN RAGS.

Fine merchant tailors	9-10
Choice light colors	**15-18**
Browns	**11-15**
Blacks	10½-13½
Fine blues, plain	**10-12**
Fine dark	10½-13
Medium dark	6-10

Worsteds.

Blue	15-17
Black	19-20

Serges.

Black	11-12½
Blue	14-16

Flannels.

New scarlet	18-20½
New blue	17-20
Cloakings	4½-7½

J. Lee Nicholson, Pres. A. J. Stern, Vice Pres.

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Best known Cost Specialists in the United States

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The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1, 1909	$24,856,499
LIABILITIES (Including Capital)	14,173,678
RESERVE AS A CONFLAGRATION SURPLUS	800,000
NET SURPLUS OVER ALL LIABILITIES AND RESERVES	9,882,821
SURPLUS AS REGARDS POLICY-HOLDERS	13.682,821
Losses Paid Since Organization Over	$115,000,000

IDEMNITY
For loss of
Profits
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Textile Plants
at the
Minimum Rate

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

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CHARLES L. TYNER, Secretary.
HENRY J. FERRIS, Asst. Secretary.

SOFTS AND KNIT STOCK.

Soft woolens, best	5-7½
Old white flannels	12-13½
Old red flannels	**12-13**
Old blue flannels	5-7½
Old plaids	**7-10**
White stockings	20-23
White hood stock	20½-24
Clear hoods	10-12

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.27-2.35
Citric, domestic	39-50
Oxalic	6-7
Sulphuric, 66°, 100 lbs.	1.00-1.10
Muriatic, 18°	1.15-1.26
Tartaric crystals	26-27½

Miscellaneous Chemicals and Dyestuffs.

Acetate of lime, gray, 100 lbs.	2.00-2.06
Alum, lump	1.75-1.85
ground	1.85-2.00
powdered	2.85-3.25
Aqua ammonia, 26°	3½-7½
Ammoniac sal. gray	
Borax, bbls.	4½-8½
Brimstone, crude, ton	27-31
Copperas	66-80
Cream tartar, crystals	22-25
Fuller's earth, powdered, ton	22-23
Glauber's salt	66-80
Potash, chlorate, crystals	9-11
powdered	11-14
carbonate	6-8
Soda, bicarbonate	1.60-1.75
Soda, caustic, domestic, 60 per cent.	1.77-1.90
Sal., American	72-86
Vitriol, blue	5-7
Acetate of soda	4-7
Acid, picric, best crystals	26-50
tannic, commercial	30-41
Albumen, egg	61-70
blood	25-35
Alizarine, red	19
Aniline, oil	10-13
salt crystals	14
Bichromate of potash, American	9-10½
Bichromate of soda	8-11½
Bisulphite of soda	3-5
Cutch, mat	5-8
Dextrine, imported potato	6-8½
Divi-divi, ton	**42-45**

*New York, Capron. The New Hartford Knitting Co., recently incorporated with capital stock of $17,000 to take over the business of the same name, has organized with Geo. Ireland, Jr., president, superintendent, and buyer, and Delia H. Healey, treasurer.

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Manufacturers of

MERCERIZED YARNS

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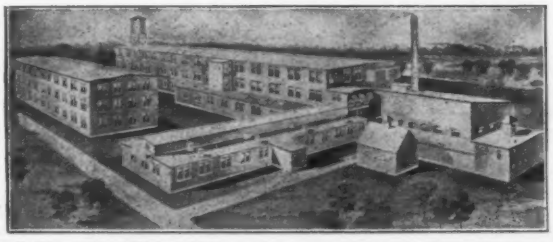
HOME BLEACH AND DYE WORKS, Inc.



Dyers, Bleachers and Mercerizers of

Cotton Yarns

in skein, and long and short

CHAIN WARPS

Fast Colors a Specialty.

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade.

Office and Works, Pawtucket, R. I.

Established 1881.

GLOBE DYE WORKS CO.,

Successors to R. Greenwood & Bault

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Globe Bleach and Dye Works,
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Of Turkish Towels, Cotton Yarns, Underwear and Tapes

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Office, 2557 Orianna Street, Correspondence Solicited

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FOR ALL TEXTILE PURPOSES

Fast Colors on Silk for Worsted Manufacturers.

Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

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Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

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Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

UTICA WILLOWVALE BLEACHING CO.

Sheetings, Shirtings, Lawns, India Linons. Everything in White Goods.

John MacManus, Superintendent.

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Chlorazol Brilliant Blues

Brightest Blues on the Market

Cross Dye Blacks BX & RX. Cross Dye Yellow D.
Cross Dye Browns 2R, 4R, 6R, D.
Fast to Milling, Light and Cross Dyeing.

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Drying and Sulphur House Poles of Natural Round Water Grown Cedar for **Cotton, Wool, etc. Special Hardwoods** in Standard No. 1 and "Selects" without knots, grades, for **Silk Dyeing.** Manufactured by, prices and all information from
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Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.
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†7.15 P.M. Through train; Sleeper Boston to Montreal.
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Reeds, Harnesses, Lingoes, Shuttles and Quills
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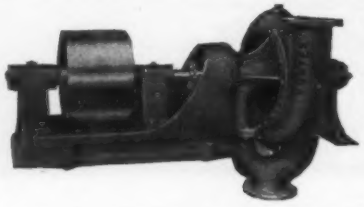

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We build them in accordance with the most advanced practice for all requirements. Consult with us on any pumping proposition.
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Catalogue T. R. now ready.

We have the Largest Exclusive Spool Manufacturing Plant in the World with a capacity of 10,000 High Grade Bushed Spools per day.

Our splendid facilities guarantee prompt and immediate deliveries. Our equipment, than which no better exists, guarantees the highest grade of all hard wood spools of the highest quality procurable at medium prices.

COTTON WARPER SPOOLS, COTTON TWISTER SPOOLS, WORSTED ROVE SPOOLS, CARPET CREEL SPOOLS, WORSTED REDUCER SPOOLS, WOOL WARP SPOOLS.

We can give one week deliveries on any order of the above kinds of spools.

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"NO WASTE"

Is the name of the only

Seamless Hard Fibre Roving Can

MADE FROM PURE CHEMICAL HARD FIBRE

NO SEAMS or RIVETS

Absolutely Smooth

No Waste or Broken Ends

Write for prices.

MANUFACTURED BY THE

Standard Fibre Co.
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Shultz Aqua Water-proof Belting

is recommended for drives in textile mills and dye-houses. **Aqua** is made from heavy selected hides tanned by our patent process which makes the leather impervious to water, steam, oil, acid fumes, etc. It is also unaffected by extreme changes in temperature.

In addition to its water-proof qualities **Aqua** is also strong and pliable and will stand service where a canvas or rubber belt would not last any time.

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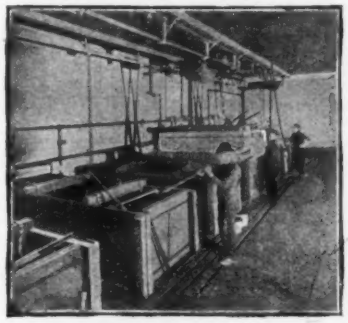
Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



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The saving of labor will more than pay for a machine in a few months.
Capacity; 2,000 lbs. a day per man.
Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

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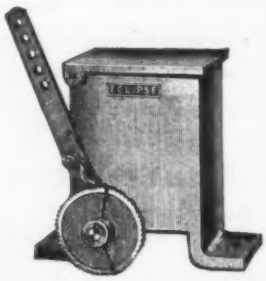
Cut 1.—Shows all the outside working parts.



There is Nothing Else this Oil Pump CAN do but PUMP OIL, because of its construction. There are

No Cranks No Eccentrics
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No Packed Joints in Its Entire Construction. Nothing to get out of order in the

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Yet it will positively feed any kind of lubricating oil under all temperatures to which it is subjected and against any steam pressure used. Get our price before buying

The Eclipse Oil Pump Co.
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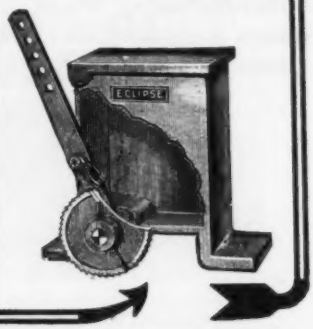
Cut 2.—Shows nothing in tank but the oil hole.



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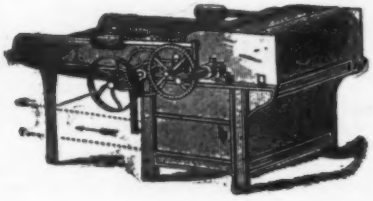

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FOR TEXTILE MILLS

What is Cooper-Hewitt Light?

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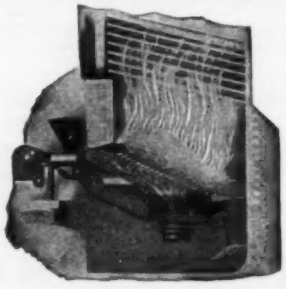
FROM COAL

Can be obtained only when the furnace gives time and space and correct amount of air. The

Taylor Gravity Underfeed Stoker

insures complete combustion



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Needs no covers,
Will not split or warp;
Not liable to break.
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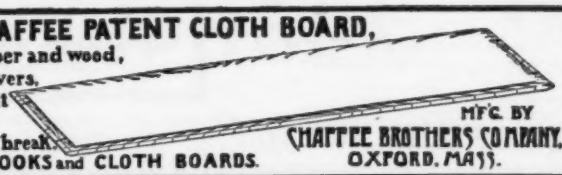

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Installed in any type of boiler without change in setting. Uniform superheat guaranteed.

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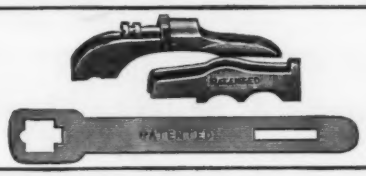

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Variable Speed Countershafts

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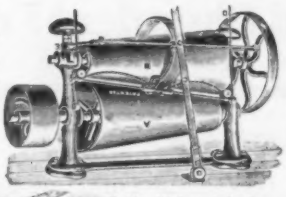
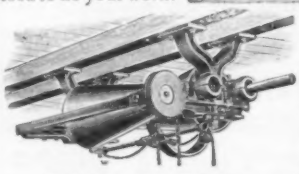
will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.

They are guaranteed to do your work.





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And PATENT EXPANSION COMBS For Warpers, Beamers and Slashers.

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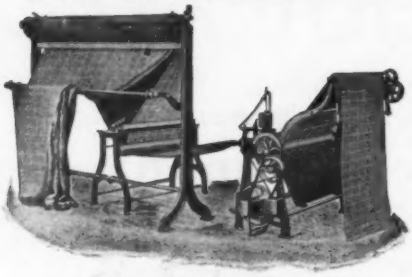

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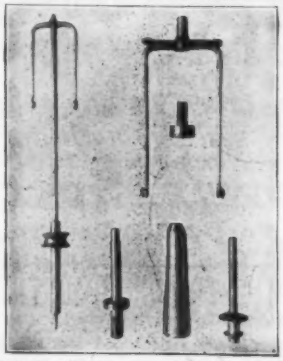

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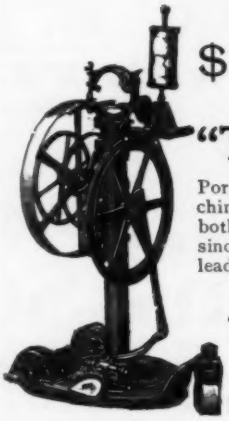

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ARLINGTON MACHINE WORKS

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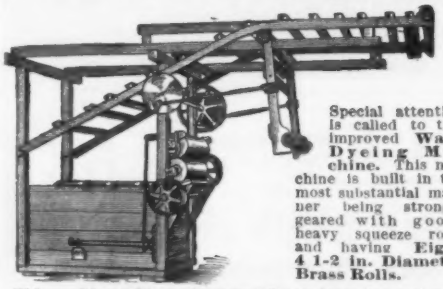
The Reliance Warp Dyeing Machine



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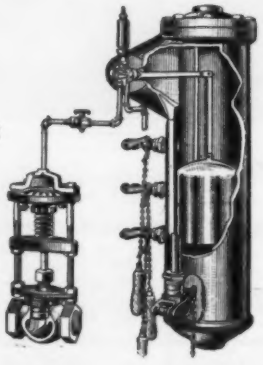

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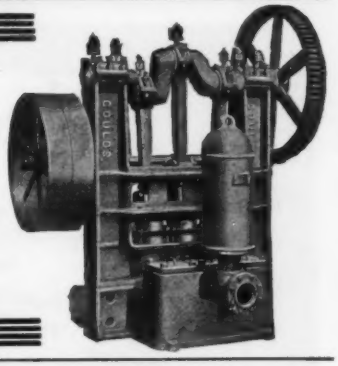

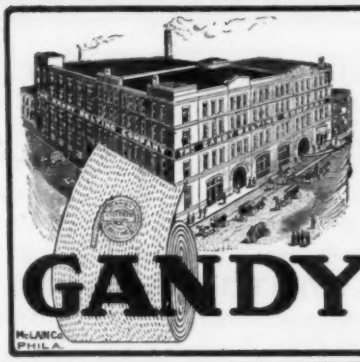

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for elevating, conveying and all power transmission purposes.

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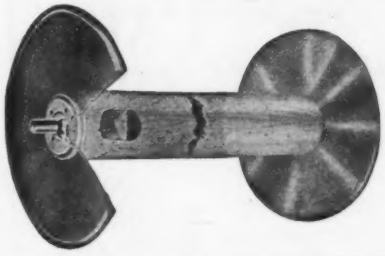

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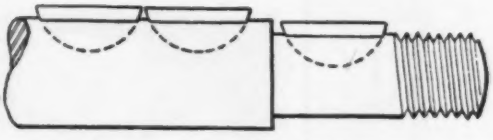

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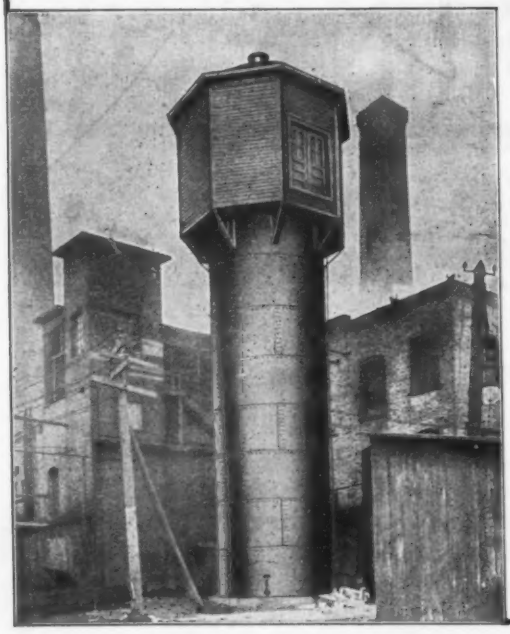

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Each installation is built to meet all requirements.

No anticipated results—we know exactly what we can do for you, and base the payment upon the results guaranteed in advance.

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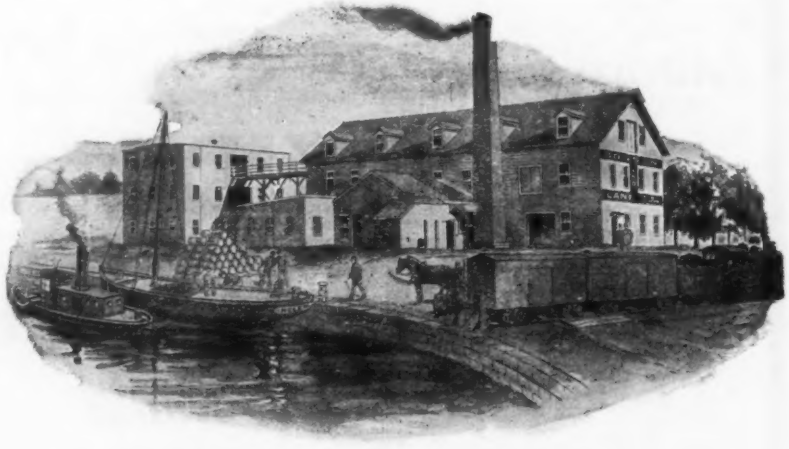

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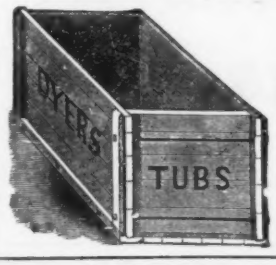

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Manufactured by
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CALCIUM CHLORIDE
Used by the largest Cotton Mills, Print Goods Mfgrs. and Sizing Makers.

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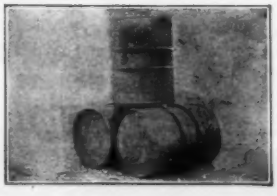
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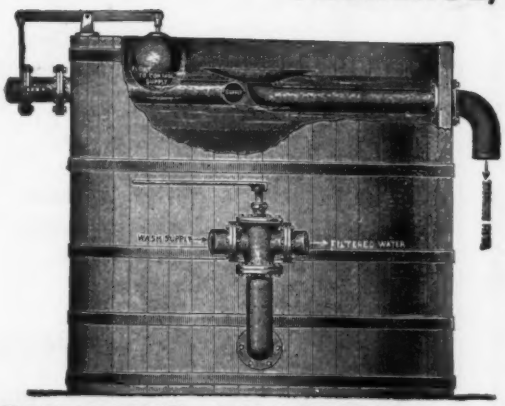

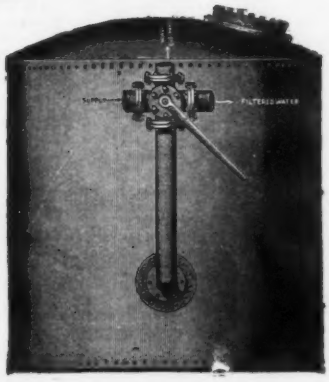

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Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.

FILTERS AND WATER SOFTENERS

Hungerford Filters having a daily aggregate capacity of over thirty million gallons per day are now in operation in the textile mills of America.

Estimates and plans for proposed installations submitted without cost.

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All sizes all shapes.

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LARGE TANK WORK A SPECIALTY

Send for catalog. Established 1849.

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you size or finish your goods,

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you strip your goods,

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from standpoint of economy as well as quality of fabric.

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For handling wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty.

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With a minimum expenditure for steam, labor and repairs by using the

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which combines the best features of old practfce with the latest improvements.

We boil off **water** not caustic: boil down with but **one** passage of the liquor and deliver it at the **right** density.

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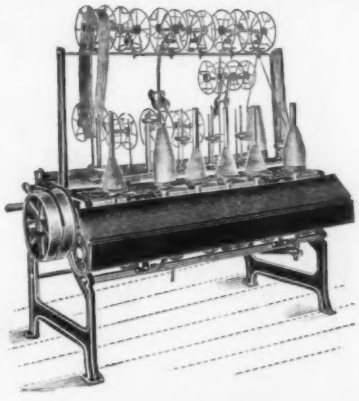

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ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.
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SAVE YOURSELVES MONEY AND WORRY
SPECIFY **YOUNG'S** EXTRACTS
BLACK OAK (Quercitron Bark) **AND SUMAC**
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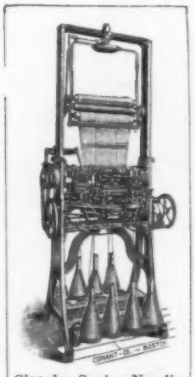
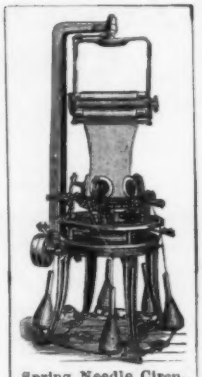


Circular Spring Needle Rib Top Machine.

Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



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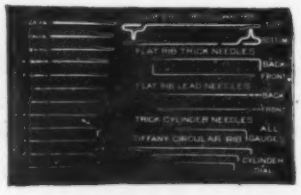
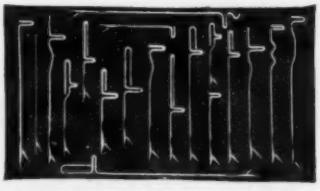
Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



Spring Needles.

Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



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Full Fashioned Hosiery Machines

BUILT BY

SCHUBERT & SALZER

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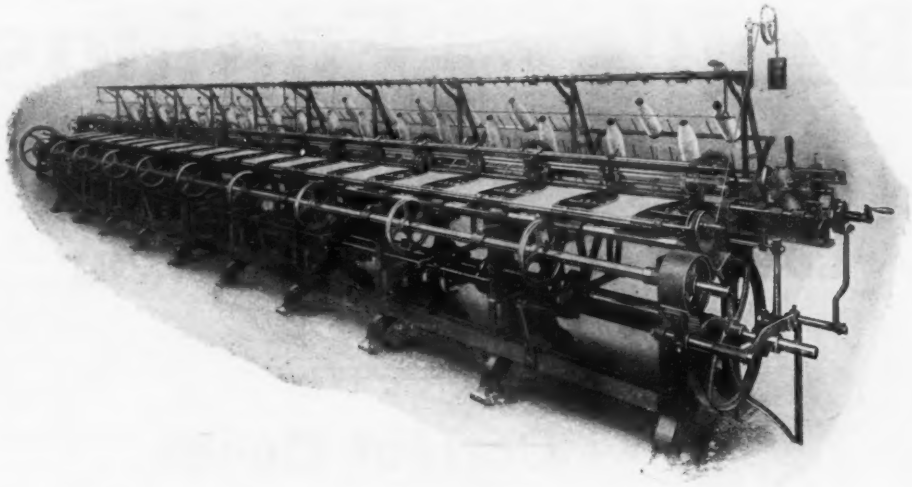
Largest Manufacturers of all Classes of Hosiery Machines



Best constructed and most productive machines in the market for the manufacture of Full-Fashioned Hosiery in Cotton, Lisle or Silk in all gauges, from 14 to 32 needles to the inch, from 12 to 24 sections.

Split-Sole, Plaiting, 2, 3 or 4 Color Striping
Single or Double Lace Attachment.

Also: New Jacquard Lace Hosiery Machines.
Ribframes Winders

REFERENCES:—All the leading manufacturers of full-fashioned hosiery in this country.

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FRIEDBERGER-AARON MFG. CO.

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Braids and Edgings

FOR TRIMMING

Ladies' Ribbed Underwear

OUR MOTTO: Correct Goods
Right Prices
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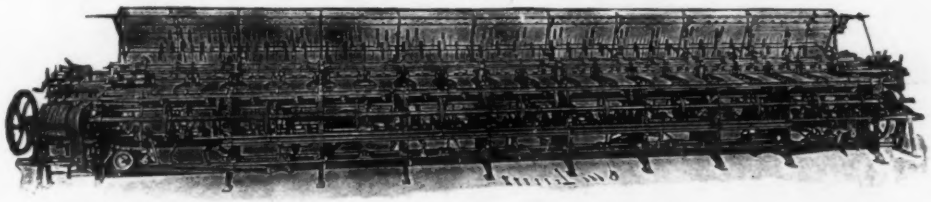
All Special Machines for Any Article That Is Knit

Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony**



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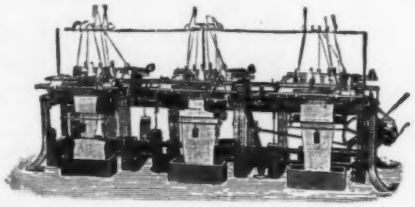
GROSSER Flat Knitting Machines
For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



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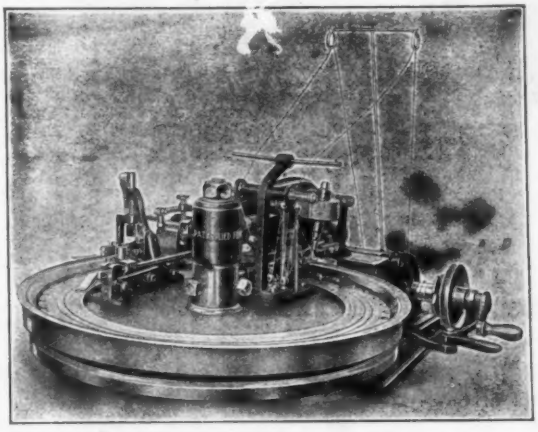
C. Terrot Söhne, Cannstatt, Würt, famous builders of the best Circular Frame for Finest Underwear, Fleece Linings, Gloves, Special á-jour (openwork) Fabrics, etc.

RASHEL MACHINES [Double Rip Warp Knitting Machines.]
For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool cotton.



The LOOPER THAT LOOPS!
Two thread lock stitch machine with reliable trimmer and raveller producing *indistructible, flat elastic* seam.
No Hosiery or Underwear plant up to date without this machine.

DIAMOND OVERSEAMERS
for all classes of selvege goods, Full Fashioned Hosiery, Underwear, etc.

FINISHING MACHINES for Knit Goods of all styles.

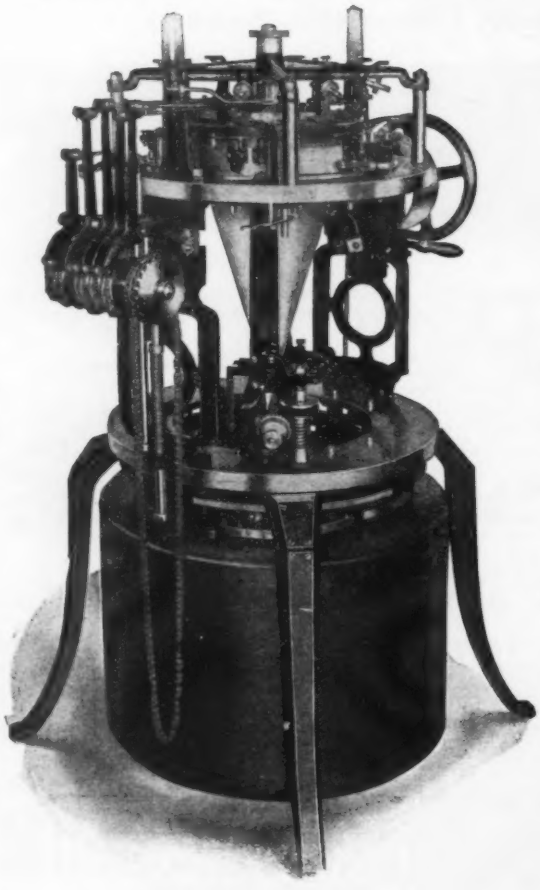
WINDERS for finest yarns.

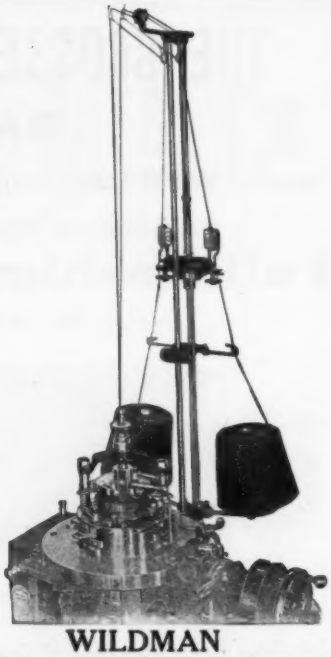
Information, Samples and Specifications at Your Disposition

Wildman Mfg. Co.

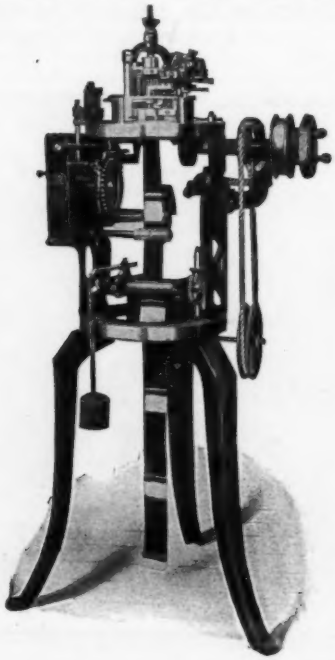
MANUFACTURERS OF

Circular Rib Knitting Machinery
AUTOMATIC STOP MOTIONS
ELECTRIC CLOTH CUTTERS





WILDMAN
Chainless RIBBERS for Hosiery
With Automatic Attachments for
Striping, Splicing, Selvage Welt and a
TWO-SPEED DRIVE
To Increase and Improve the Product
WILDMAN AUTOMATIC STOP MOTIONS



WILDMAN
Plain and Automatic Machines
For Underwear, Union Suits, Sweater Coats, Knitted Skirts, etc.
Established Reputation for Large Production, Quality of Fabric, Durability and Economy of Operation.
Illustrated Descriptive Catalogue.

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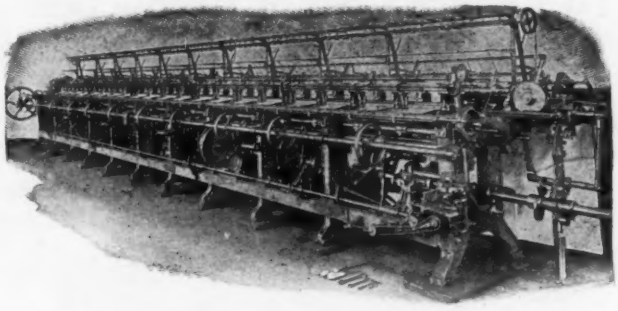

David Richter, Inc.

were the first machine builders in Chemnitz, Germany, to construct

Full Fashioned Hosiery Machines

upon the *Cotton principle* and which since their introduction have never been excelled by any other machine builder, be it in construction or production. Built in all gauges and for any material, cotton, wool, lisle or silk.

Edward Dubied & Co.

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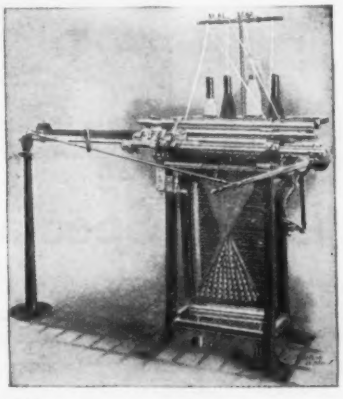
Leading Manufacturers of

Flat Knitting Machines



For Hand and Power, Full Automatic, Etc.

Best constructed and most productive machines on the market for manufacturing sweaters, gloves, sporting goods, etc.

Acknowledged by experts, users and judges to be

"The Best."

Machines can be seen in operation.

Flat Rib Cuff Machines, improved cotton system. **Double Rib Warp Looms.**
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Higher Speed

To Reduce Cost of Production by Increasing Output of Operators

Higher Efficiency

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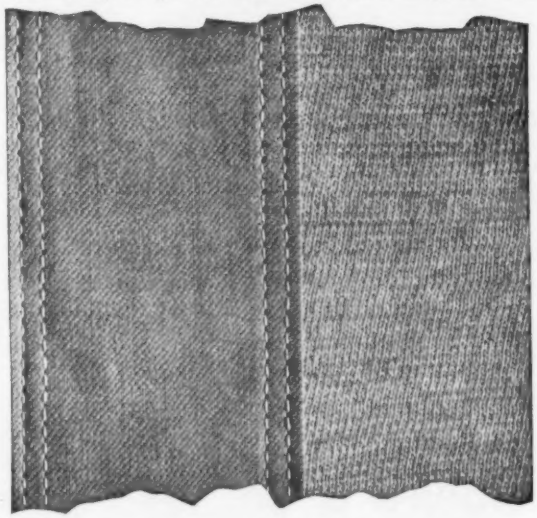
Multiple Needle Machines

For all Multiple Needle Operations, whether for Ornament or for Service, where it is desired to have a plurality of parallel rows of stitching, needles spaced as desired

Yielding Bottom Presser Foot to be used where different thicknesses of Fabric are being Stitched Simultaneously



Special Fittings and Attachments now ready for Numerous Manifold Operations

Greater Simplicity

Style 16100 A-4 Needles-8-80-8 Gauge
Stitching Front Facings to Shirts
One Operation

Greater Durability

Union Special Machine Company

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Increase in Production of 30 to 60%

By Using the Climax High-Speed Attachment

on any make of circular rib knitting machines.
Interchangeable expansion hosiery stamp.
Automatic stop motion for double knee rib frames. Transfer cup.
Flat knitting machines equipped with

Climax Improved Power motion | Automatic take up | Chain saving device
Metal stand | Automatic racking | Automatic stop motion

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Ribbed Hosiery and Underwear Makers

You Can Double Your Present Production Without Adding New Machinery

fill your orders in half the time now required—do in 6 months as much work as you now turn out in 12, by using the *new patented*

Double Acting Attachment for Ribbers

It makes good Ribbers better; reduces the necessary space; is built on the interchangeable plan. We can change over WILDMAN, BRINTON, or SCOTT & WILLIAMS machines.

Secure this Double-Acting Attachment and increase your output 50%. Tests prove our claims.

Machines exhibited and sold by

James Taylor

Dealer in New and Second Hand Knitting Machinery

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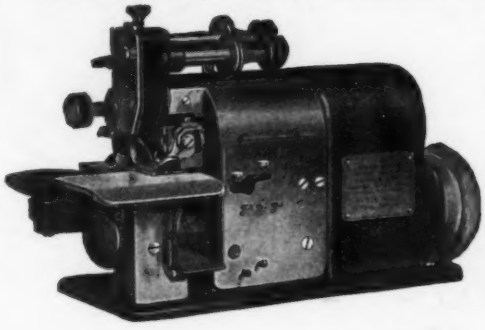
The Merrow

High Speed Overseaming, Overedging and Scallop Stitch Machines are

FAST
DURABLE
Light Running



OUR STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 or 22 for Bed Blankets. STYLE 35 B SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

Knickerbocker Building, Sixth and Arch Sts., Phila. 467 Broadway, cor. Grand St., N.Y. 237 Market St., Chicago, Ill.

EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

ALLENTOWN, PENNA.

BUILDERS OF

Full Automatic Knitters

With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

Circular Knitting Machine

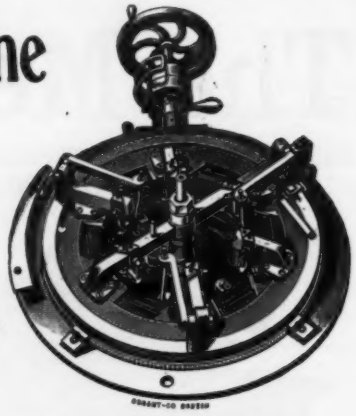
Plain or Full Automatic

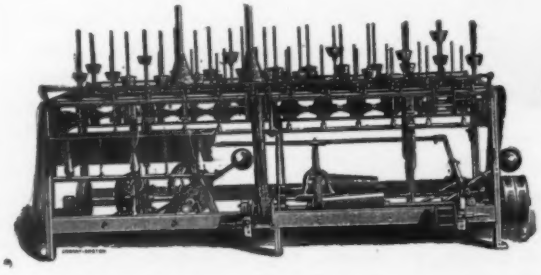
with stop motions complete.

4 to 24 Feeds

FOR RIBBED UNDERWEAR

Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.





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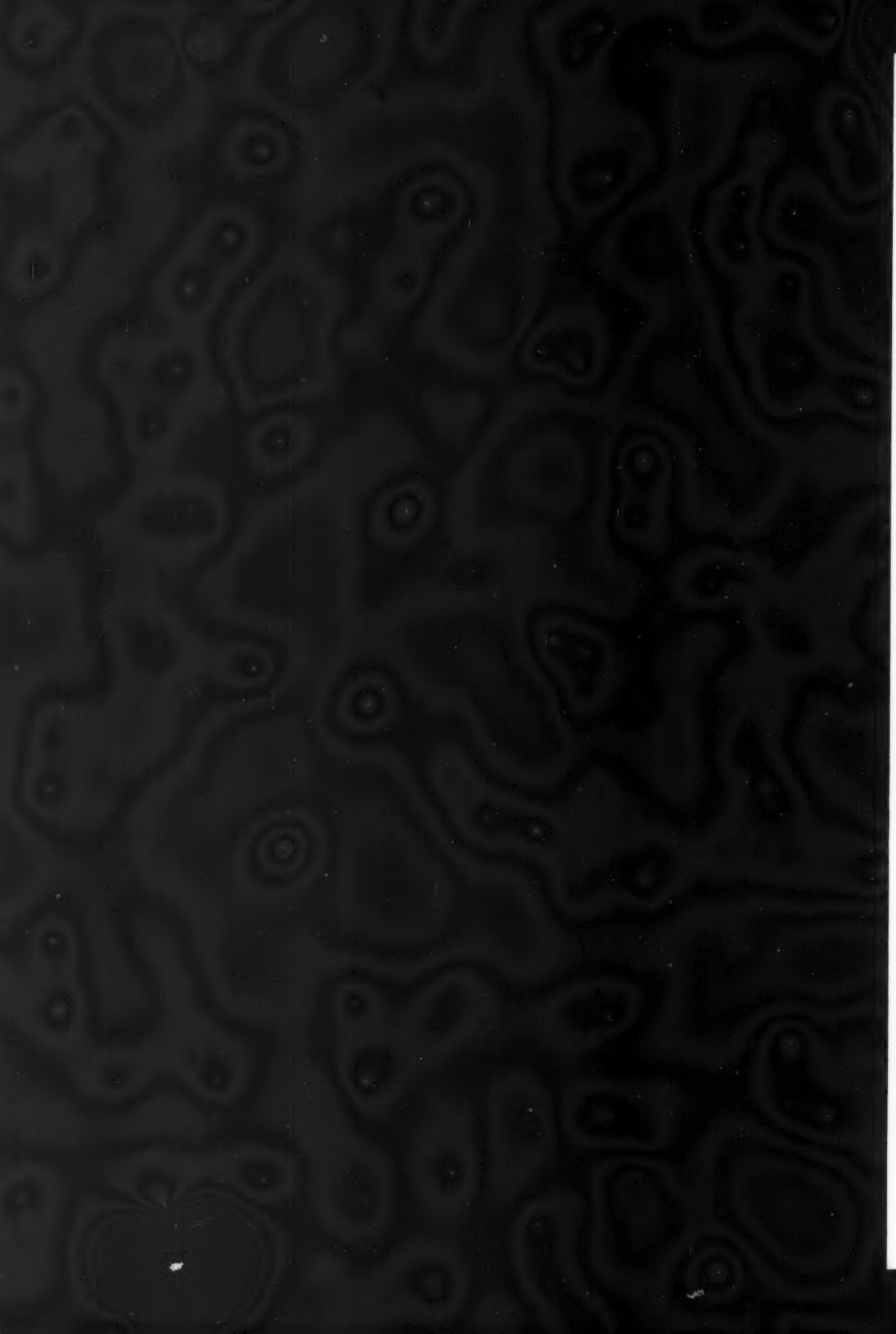
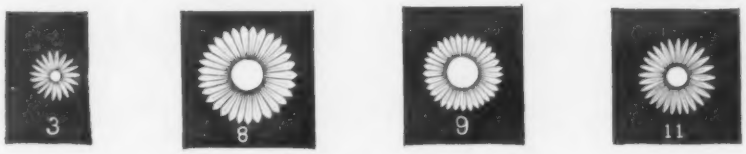
ABEL WINDERS, SEAMERS and LOOPERS

ARE ALSO BUILT BY US

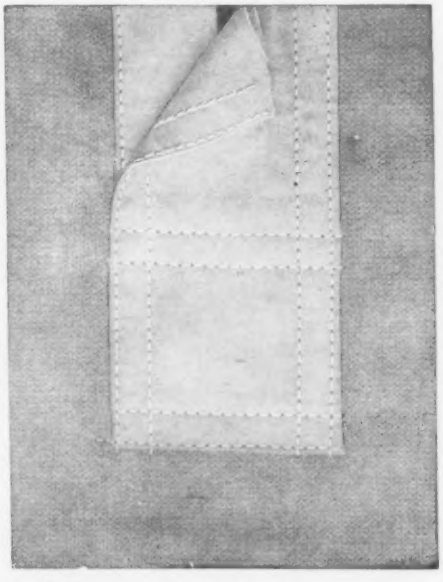
LEIGHTON MACHINE CO., Manchester, N. H.



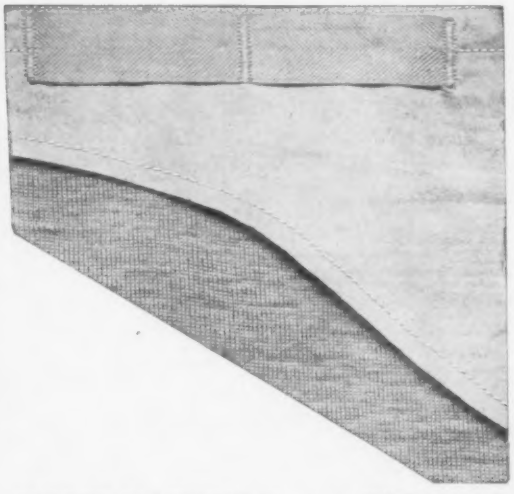
Singer Machines for Knit Goods



SINGER MACHINE No. 19-W-3, FOR EYELETS, makes a plain Radial Stitch from 3/32 to 1/4 of an inch, inside diameter. The operator stops the machine at his option, there being no automatic stop motion



SINGER MACHINE No. 52-32, has four needles and four hooks for buttonhole facings; folds the raw edging of facing and lining and stitches same upon knit undershirts in one operation. Needles gauged $\frac{3}{16}$"-$1\frac{1}{8}$"-$\frac{3}{16}$" apart, unless otherwise specified.



SINGER MACHINE No. 79-1, FOR TACKING DRAWER STRAPS, is adjustable for making the bar tack from $\frac{1}{2}$ to $\frac{7}{8}$ of an inch long and $\frac{1}{16}$ to $\frac{3}{16}$ of an inch wide, the last two stitches fastening the thread and the automatic cutters trimming it close to the tack, both top and bottom.

Free Samples of Work Furnished on Application

Singer Sewing Machine Co.,

Room 3613 **Singer Building, New York**

YOU CAN SAVE TIME AND MONEY

By Letting Us Do Your Purchasing

Our years of experience in Mill Management and our knowledge of the General Supply Business enable us to guarantee the above.

By the adoption of our system many unnecessary interviews are avoided and you are assured of the best market prices on machinery and supplies.

Write for full particulars and give us a chance to explain our plans in detail.

Manufacturers' Purchasing Company

P. O. Box 2468 **Boston, Mass.**

NYE & TREDICK CO.

718-720 Cherry Street,
PHILADELPHIA, PA.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

QUALITY OF FABRICS AND PRODUCTION

UNEXCELLED

NYE & TREDICK CO.

"Nothing so Good as a Good Finish"

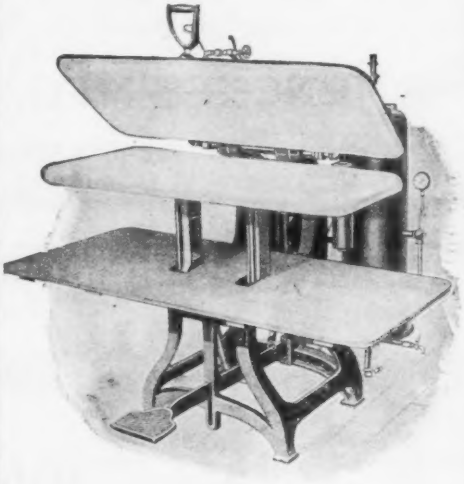
We are speaking of the finish on Knit Goods as produced by the

Hoffman Press

Presses a full garment in one operation, leaving it smooth and of fine finish.

Will not break buttons.

Floor space required—4 feet square.



The "Hoff-Man" F.

Write us for prices, particulars and illustrated catalogue

United States Hoffman Company

229 Temple Street

SYRACUSE, N. Y.

THE INVINCIBLE

Full Automatic Knitting Machine

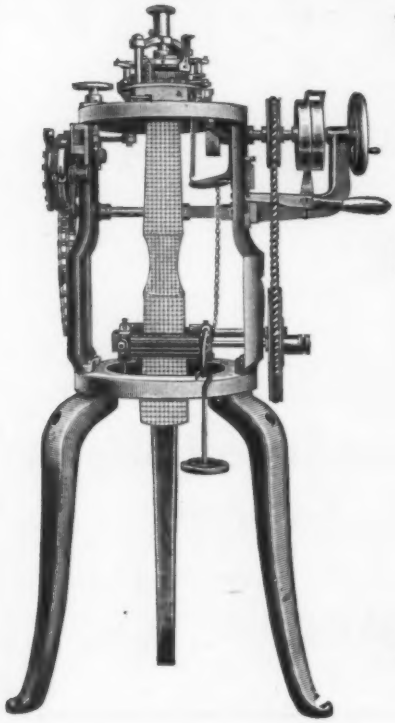
Almost universally used for fine gauge work, because it is the only successful machine built as fine as 240 needles in 3 3-4 inches, and produces a fabric which is unequalled.

Furnished with garter top and double sole attachment.

Our new methods of reinforcing solve all reinforcing problems.

E. JENCKES MFG. CO., Pawtucket, R. I.

Philadelphia Office, 101 No. 6th Street



You Will Increase Output

and

Decrease Your Expenses

By Using Our High Speed

Rib Knitting Machinery

Our latest models will cause fewer seconds, less breakage of needles, less jar, wear and tear, than machinery designed for lower speed.

While effecting this saving, it decreases your production cost and so increases your profit.

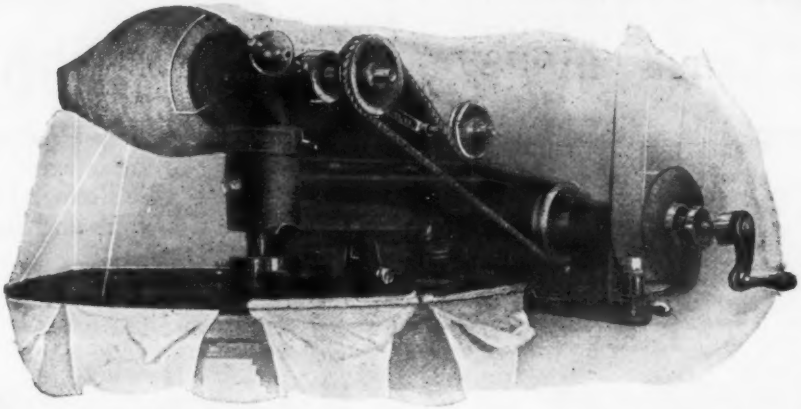
The same economies result from the use of our Stripping and Designing Machines for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

STAFFORD & HOLT,

LITTLE FALLS, N. Y.

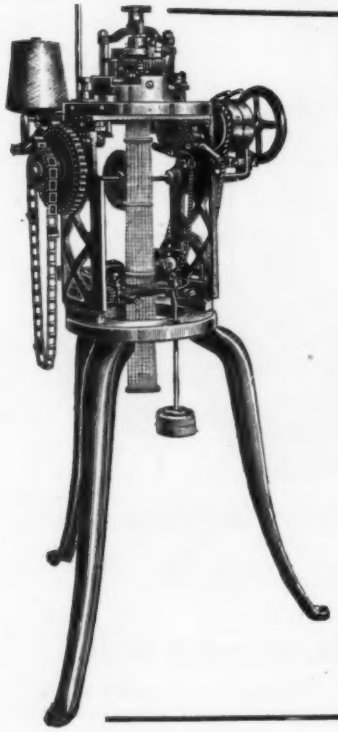
The "RAVLWIND" Saves Hosiery Manufacturers

$2 to $3 a Week on Each Looping Machine



It does away with hand raveling and winding, and is entirely automatic. Has increased the production as much as 40%. The "Ravlwind" folder gives other facts that will surprise you—send for it.

Arguto Oilless Bearing Co., Wayne Junction, Phila., Pa.



Expense-Reducing

Knitting Machinery

FOR

Hosiery, Underwear, Sweaters, Toques, etc.

You can economize on production costs by using our

Improved Automatic Ribber

AND

Full Automatic Knitter

Estimates Furnished for Complete Equipments Send for Particulars.

H. Brinton Co.

213-215 Race St., Philadelphia, Pa.

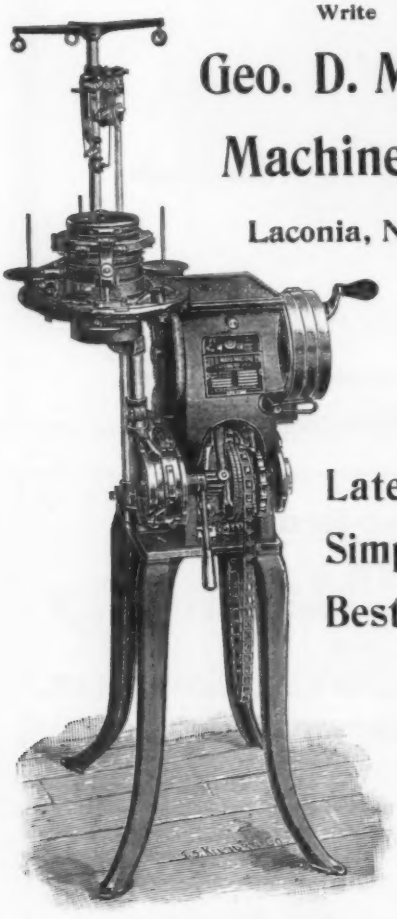
If You Want

Largest Production For Least Money

Write

Geo. D. Mayo Machine Co.

Laconia, N. H.



Latest
Simplest
Best

MAYO'S

New Full Automatic Knitter

PHILADELPHIA OFFICE
Knickerbocker Bldg., Cor. Sixth and Arch Sts.

GENERAL MACHINE WORKS

YORK, PA.

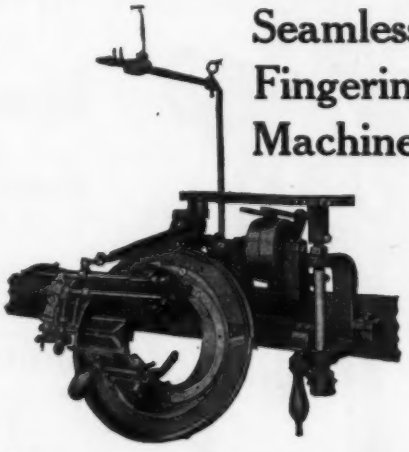
Manufacturers of

Ribbers

for Hosiery, Underwear and Gloves. Splicers and Sleevers

We carry a large stock of needles and can supply your wants promptly. We are prepared to cut cylinders and dials promptly and accurately. We develop and market new ideas for any one. Your inquiries will be appreciated.

Seamless Fingering Machine



Knit Glove Manufacturers

If you want to be up to date, ask us for particulars of this machine. Indorsed by leading manufacturers.

James Leckie & Son,
821 N 13th Street, Phila, Pa.

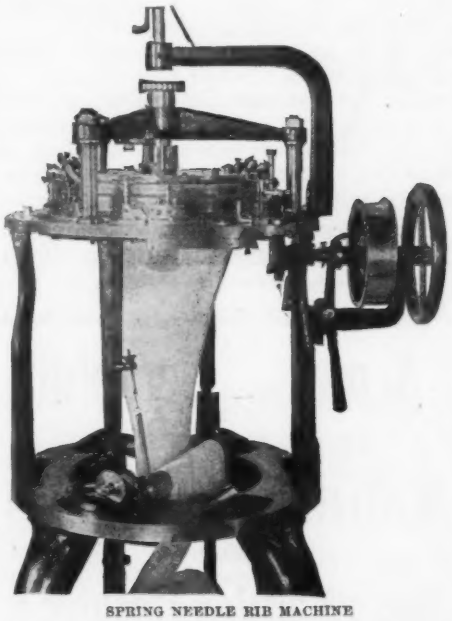
Established 1870.—Incorporated 1890.

CRANE M'F'G. CO.

LAKEPORT, N. H.

Manufacturers of

Spring and Latch Needle Machines for both rib and plain work, producing a great variety of fabrics. Patent removable hardened Wing Burr Wheels.



SPRING NEEDLE RIB MACHINE

CASE BROTHERS

INCORPORATED

Highland Park, Conn.

Manufacturers of

RAG PRESS BOARDS

Especially Adapted to

Hot Pressing

Also

Fender Boards

Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards

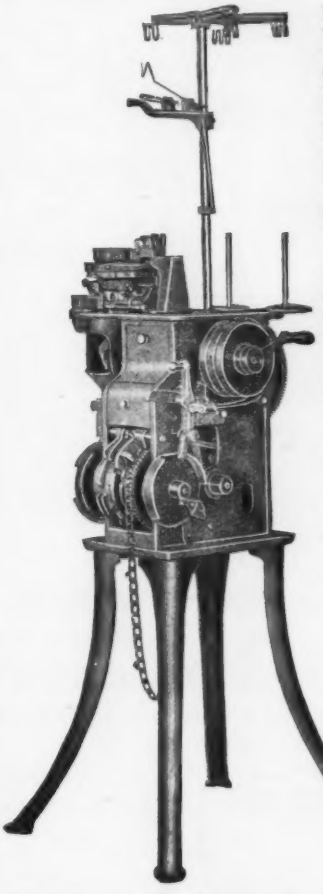
of all Grades for Fancy Weaving. Accurately Cut to Any Size.

"THE BANNER"

Hemphill's Latest

A FULL AUTOMATIC MACHINE

Specially adapted to



Manufacture Hose with Linen or Mercerized heel or toe.
Also for

Plaited Goods

and

String Work

High Splice

and

Double Sole

Largest Production

More Yarn Changes

Highest Speed

Simplest

Least Repairs

Produces a Superior Quality of Work.

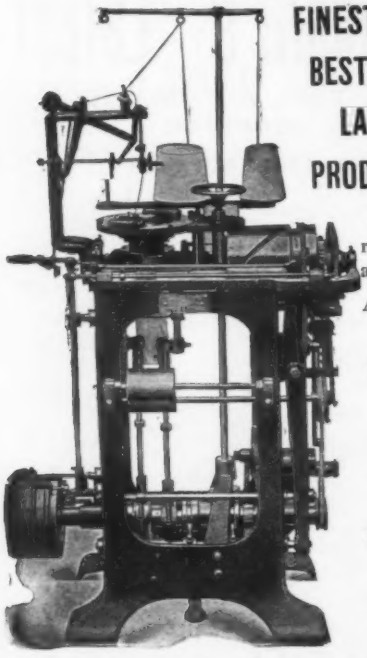
MANUFACTURED BY THE

Hemphill Mfg. Co.

131 Clay Street, PAWTUCKET, R. I.

"NATIONAL"

Stands for



FINEST GAUGES
BEST FABRIC
LARGEST
PRODUCT ON

Greatest Variety of Laces and Novelties.

Allautomatic.

Lowest Cost for Operating

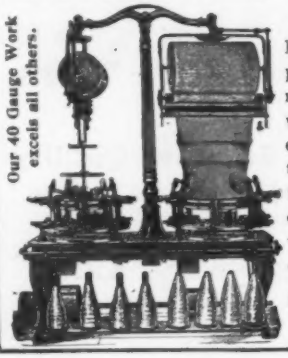
Also Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

1028 Susquehanna Avenue. PHILADELPHIA, PA.

We are the Oldest Manufacturers

of this Design of Spring Needle Knitting Machine in this Country



40 years' experience

Do not be misled by people who became manufacturers in 1903 without any previous experience who are trying to represent that they are the oldest manufacturers. Investigate. Call and see our fine gauge work.

Robt. W. Gormly & Co.
Troy, N. Y.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
Cor. Elm and Reed Sts., Reading, Pa.

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Mayo Knitting Machine & Needle Company

Franklin, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers like our Latch Needles

because we make a superior grade of needles.

Philadelphia Office, Knickerbocker Bldg.

STANDARD MACHINES FOR HOSIERY MAKING

The STANDARD F, with attachments, can make any and all of these fabrics:

Plain Goods
Plaited Work
Three Color Stripes
Tipped Heel and Toe
White Foot
Changed Heel and Toe
Garter Top
Loopers Slack Course

Most Stockings—Best Fabrics—Longest Life

Standard Machine Company

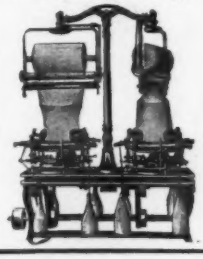
OFFICE AND SHOW ROOMS

330-340 North 12th St., Philadelphia

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:
Cross Question 122. How long have you been a manufacturer of knitting machines? Answer. I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.
BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLY Was born, according to his testimony in the case above cited.

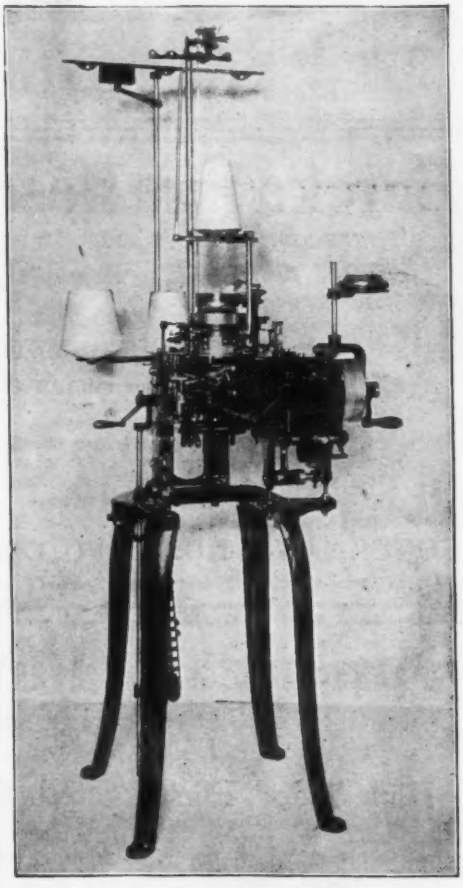
Full Automatic Knitters

For Ladies', Half Hose and Footing, also for

Ladies' Split Sole and Lace Hose

Full Fashioned Legger and Heeler for Full Fashioned Hose.

Measure lengths like a Rib Frame.

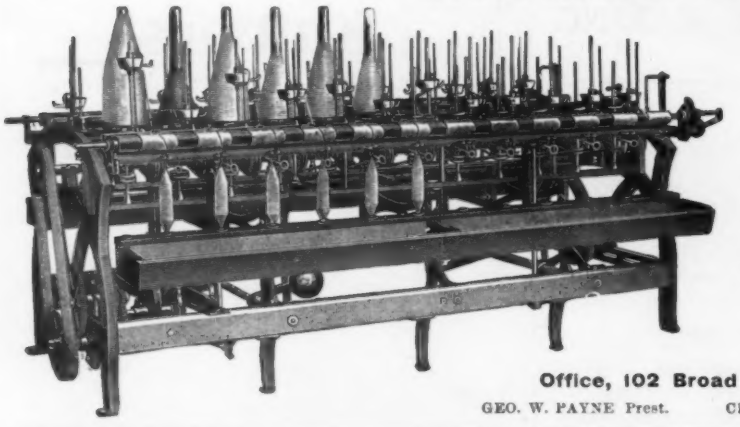


Paxton & O'Neill

537-41 North Third Street, Philadelphia.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1903.]

Office, 102 Broad Street, Pawtucket, R. I.

GEO. W. PAYNE Prest. CLINTON F. PAYNE, Sec'y. and Treas.

Eureka Fire Hose

THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

Cotton Mills, Woolen Mills and Factories.

Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

EUREKA FIRE HOSE MFG. CO.
13 Barclay St., New York, N. Y.

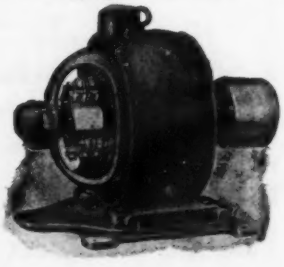
Diehl Manufacturing Co.,

ELIZABETHPORT, N. J.

HIGH GRADE

Electrical Apparatus

A line of Slow Speed Motors Especially Adapted to Textile Work

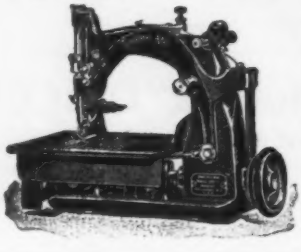


American Raveller Company

PHILMONT, N. Y.

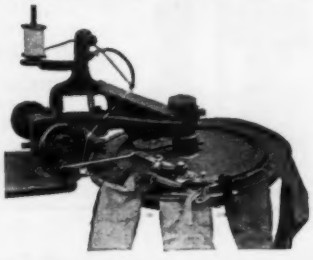
MANUFACTURERS AND PATENTEES OF

High Speed, Elastic Stitch Sewing and Trimming Machines



Also ravelling machines for making knit underwear and hosiery full fashioned.

2 line and twin needle machines for fancy stitching.



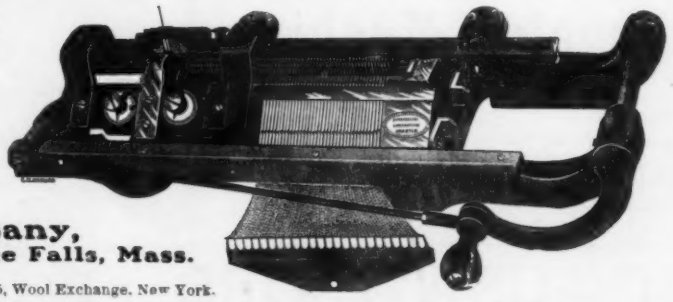
The LAMB

LEADER OF KNITTERS

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

Circular Machines, Rib Top and Seaming Machines.



Lamb Knitting Machine Company,

P. O. Box, 5888, **Chicopee Falls, Mass.**

J. E. WOODHEAD, 100 22d St., Chicago.

L. D. SANBORN, Room 505, Wool Exchange, New York.

THE

DYEING and FINISHING MACHINE WORKS

Automatic Singeing Machines	Steel Dry Boxes
Automatic Dyeing Machines	Cold Hosiery Presses
Vats Extractors	Bleaching Equipment for Hosiery
Chrome Machines	Oxidizing Machines

WE ARE THE SOLE MANUFACTURERS

UNDER GEO. W. STEVENSON'S PATENTS

Office 605 Colonial Building **Reading, Penna.**

We Lead in the Industry of Knitting Machines.

130,000 Knitting Machines in use all over the Universe

CLAES & FLENTJE

Mühlhausen Thr., Germany

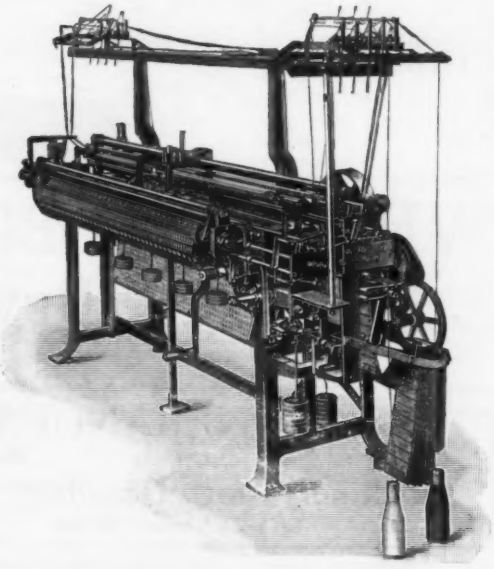
(Largest Knitting Machine Factory in the World)

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

The cut represents our newly patented fully automatic left and left power machine for producing fancy stitches that formerly could only be produced by hand.

For full particulars, needles and supplies for all kinds of knitting machines, write to



Ainslie Knitting Machine Co.

281 Ainslie Street, **Brooklyn, N. Y.**

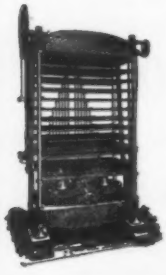
HEPWORTH & CO.'S
Patent Single-Stitch
Looping Machine

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch or Both Combined.

JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher St
PHILADELPHIA.

The CRAWFORD



HOLLOW STEAM
PLATE PRESS
For Knit or Woolen Goods.
The most reliable machine of the kind on the market.
PRESS PAPERS and FENDERS.
SPENCE & RIDEOUT,
Successors to
J. J. CRAWFORD & SON,
NASHUA, N. H.
Established 1868.

Patent Loopers

Single, double and two thread Stitch.
with the
Patent Raised
or
Straight Points.
Beattie Manufacturing Co.,
Cohoes, N. Y.

Drying Forms.

BOARDS FOR FAST BLACK DYERS.
HOSIERY FINISHING BOARDS.
BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.
JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

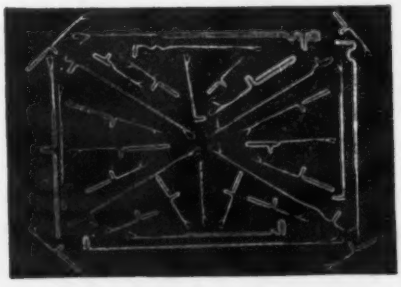
Hosiery Boards.

WILLIAM C. BULL, BENNINGTON, VERMONT.
MAKER OF
For Ladies', Gents' and Children's Goods.
Latest Styles.
Best Workmanship.
Drying Form Boards
OF EVERY VARIETY.

MASON MANUFACTURING CO., Inc.
Makers of
Machinery for Braiding and Finishing Sash Cord.
15 1-2 Chardon Street BOSTON, MASS.

TRY OUR "SUPERIOR", OR SUNKEN RIVET-HEAD NEEDLES

They will save you money.



Dodge Needle Co., Manchester, N. H.

WM. COREY CO.,

Manufacturers of Knitting Machine

Latch Needles

MANCHESTER, N. H.

EXCELSIOR NEEDLES.

The best Hosiery Needles in the market.

Manufactured by

WARDWELL NEEDLE CO., Lakeport, N. H.

WM. BREEDON'S SON,

MANUFACTURERS OF

Spring Knitting Needles

AND BURR BLADES OF ALL KINDS.

AMSTERDAM, - N. Y.

Reels for Cotton **WOOLEN AND WORSTED**

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

Standard Latch Needles

MANUFACTURED BY

EXCELSIOR NEEDLE CO.,

TORRINGTON, CONN.

The Largest Manufacturers of Machine Needles in the World.

STANDARD

TRADE MARK.

Longer Wear. Better Work.
Less Mending. Fewer Seconds.

Have you tried our

Patent Milled Rivet?

Agents

C. B. Barker & Co., Ltd., 42 W. 15th St., New York.
Manufacturers' Supplies Co 418 Arch St., Phila.
C. Shawl, 414 Polk St., San Francisco, Cal.
J. C. Strittmatter, 2a Calle de San Francisco No. 9, City of Mexico, Mexico.

L. T. IVES CO.

Manufacturers of all kinds of

SPRING KNITTING NEEDLES

NEW BRUNSWICK, N. J.

KEYSTONE LATCH NEEDLE CO.

JOHN C. EGLY, MGR.

MANUFACTURERS OF

Patent and Regular Latch Needles

Needles for all makes of Knitters and Ribbers.
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.

543 W. Lehigh Avenue, Philadelphia, Pa.

TEXTILE MACHINE WORKS

THUN & JANSSEN, READING, PA.

Manfrs of *BRAIDING MACHINES*

for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers, Measuring Machines, Reelers, Singeing and Finishing Machinery. Special Machinery.

The Continental Latch Needle Company.

Manufacturers of the BEST GERMAN NEEDLE on the Market.

RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.

120-122 LIBERTY STREET, - - - - - - - - - NEW YORK.

McCormick Turbines

both Cylinder and Wicket Gate, giving **ENORMOUS** power are used in hundreds of textile mills throughout the world.

We make a specialty of designing turbines to meet the requirements of the public.

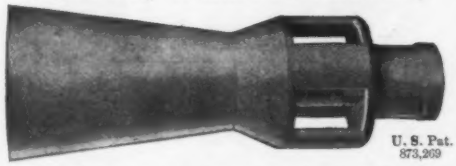
We build Francis turbines in spiral flumes to operate under high heads.

42000 H. P. in vertical shaft turbines now in course of construction to operate 10 umbrella type generators in power plant of Chattanooga & Tennessee Power Co.

Chicago Office, 644 Am. Trust Bldg.
Boston Office, 176 Federal St.

S. MORGAN SMITH COMPANY, York, Pa., U.S.A.

GEYSER WATER HEATER



U. S. Pat. 873,269

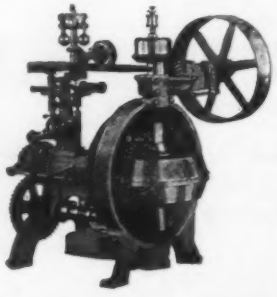
To attach to end of steam pipe for heating liquids in tanks or vats. Modifies that disagreeable noise caused by the direct introduction of a steam jet and raises the liquid to the required temperature in about 70% of time required by latter. By its thorough circulation it distributes an even temperature throughout the tank. Price list upon application.

C. G. SARGENT'S SONS CORPOR., Graniteville, Mass.

Soft Clear Water.

We-Fu-Go and Scaife Water Softening Plants and Scaife Water Filters can be seen in actual operation in Textile Plants in any part of the U. S. Apparatus designed to suit each special case, and we guarantee results. Write for Illustrated Catalogue.

WM. B. SCAIFE & SONS CO., Pittsburgh, Pa.



Water Wheel Governors

OUR compensating type more fully meets the needs of Textile Mills than any other. This is due to its being the only successful quick acting, mechanical, governor and its perfect control of large as well as small changes. 1500 of this type in use in mills and electric power plants.

Woodward Governor Co., Rockford, Ill.

HUNT-McCORMICK WATER TURBINES

CYLINDER or BALANCE GATE CASING

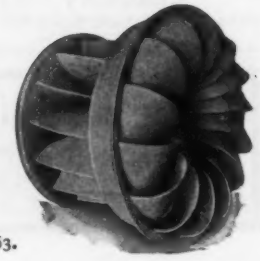
Highest Efficiency, Greater Power,
Easy and Quick Regulation,
Steady Motion, Durability.

Steel Penstocks a Speciality.

RODNEY HUNT MACHINE CO.

ORANCE, MASS.

BRANCH OFFICE: 70 Kilby St., Boston, Mass.



See our Woolen Machinery advertisement on page 63.

"SIROCCO"
Trade Mark

Smallest size here illustrated delivers over 5,000 cubic feet per hour on less than ¼ the current required by a 16 C. P. Lamp.
"Sirocco" Blowers Save Power

FOR POSITIVE DISTRIBUTION

IN CONNECTION WITH PORTABLE OR SEMI-PORTABLE

HUMIDIFIERS

— USE —

"SIROCCO" FANS

AMERICAN BLOWER CO., Detroit

Southern Sales—Empire Bldg., ATLANTA
Eastern Sales—141 Broadway, NEW YORK

SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

SEE THAT LACING!

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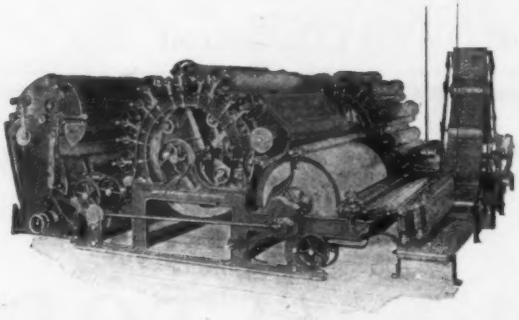
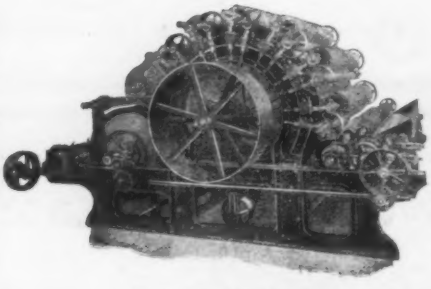
WOOL, COTTON WASTE and SHODDY CARDS CIRCULAR No. 16A

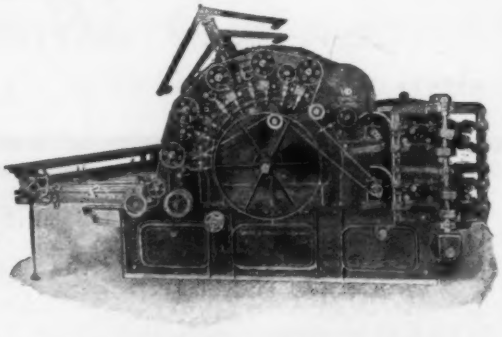
Single and Double Cylinder Cards with Card and Garnett Breasts as Desired



Two Card Set. Nos. 61 to 62, with Automatic Self-Weighing Scale Feed and Camel Back Connecting Feed



First Breaker Card No. 3, Style S



Finisher Card with Apperly Feed, Covers and Arches set close to Main Cylinder

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We invite Visitors to Philadelphia, Pa., to see our Machinery in Operation.

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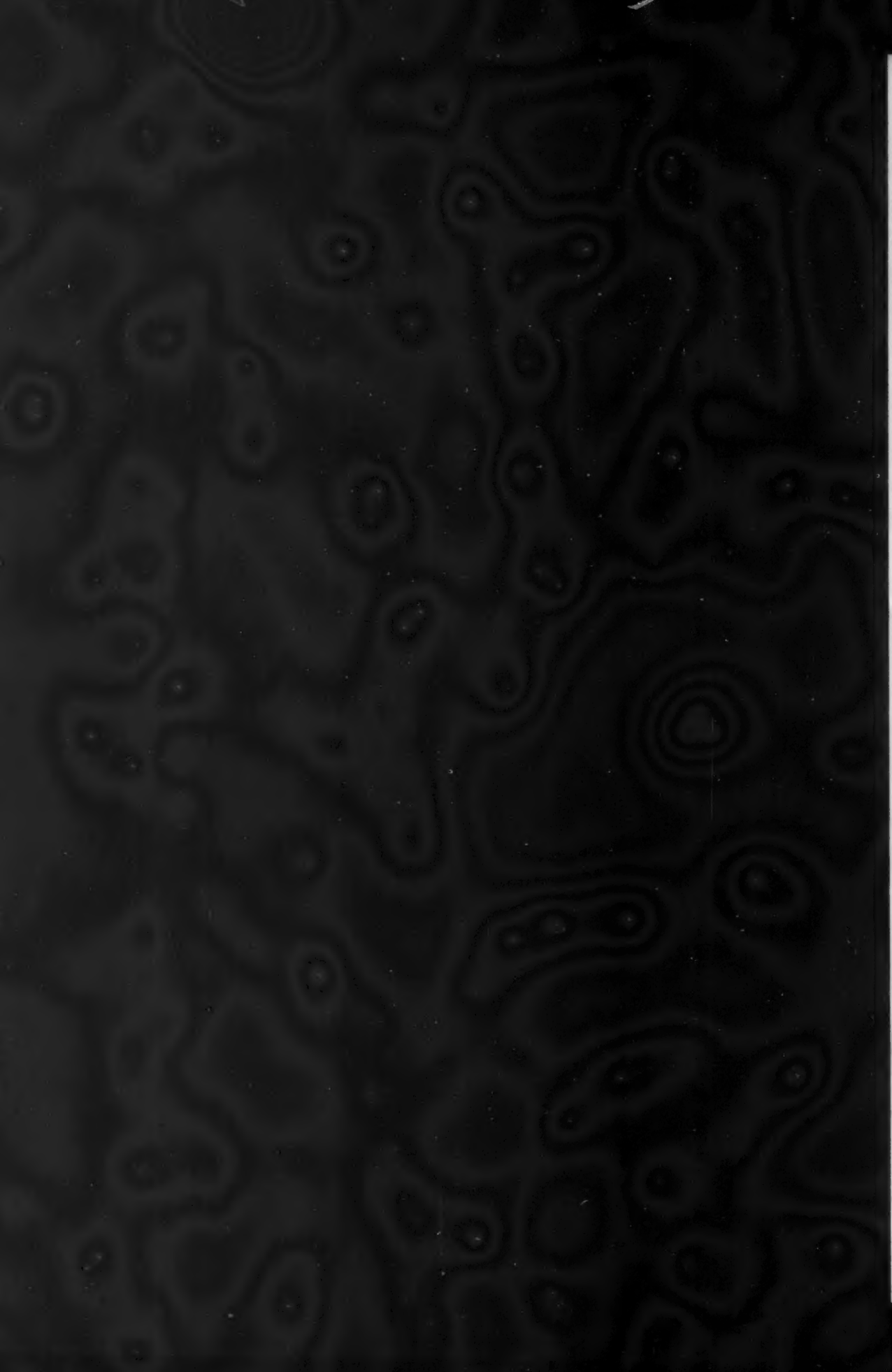

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TAUNTON, MASS.

BOSTON OFFICE, STONE AND WEBSTER BUILDING, 147 MILK ST.

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Connected with Water Mangles	They give a continuous run, yardage limited only by the speed of the Water Mangle, the time wasted by trucking, stopping, etc. is saved.
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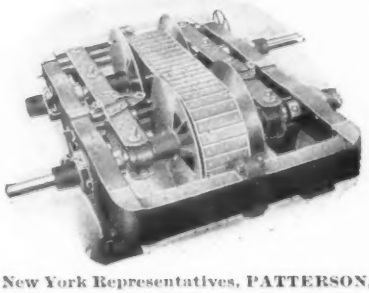

for regulating the speed of Slashers, Singers, Drying Cylinders, CELL DRIERS, Printing and Dyeing Machines, Steam Agers, Tenter Frames, Dampeners, etc., produces the best and most reliable results. *Scrap* **your Cones.**

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